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AVIATION

The Oldest American Aeronautical Magazine

FEBRUARY 8, 1926 Issued Weekly PRICE 15 CENTS

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VOLUME XX

NUMBER 6

SPECIAL FEATURES

AMERICAN AIR ACES

NIGHT FLYING EXPERIMENTS

COLONEL MITCHELL RESIGNS

GARDNER PUBLISHING CO., INC.
HIGHLAND, N. Y.
225 FOURTH AVENUE, NEW YORK

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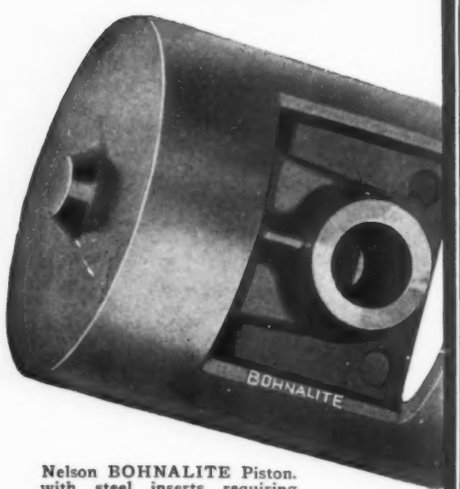

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FEBRUARY 8, 1926

AVIATION

VOL. XX. NO. 6

Published every Monday

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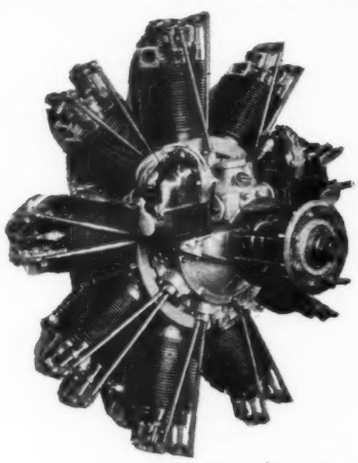

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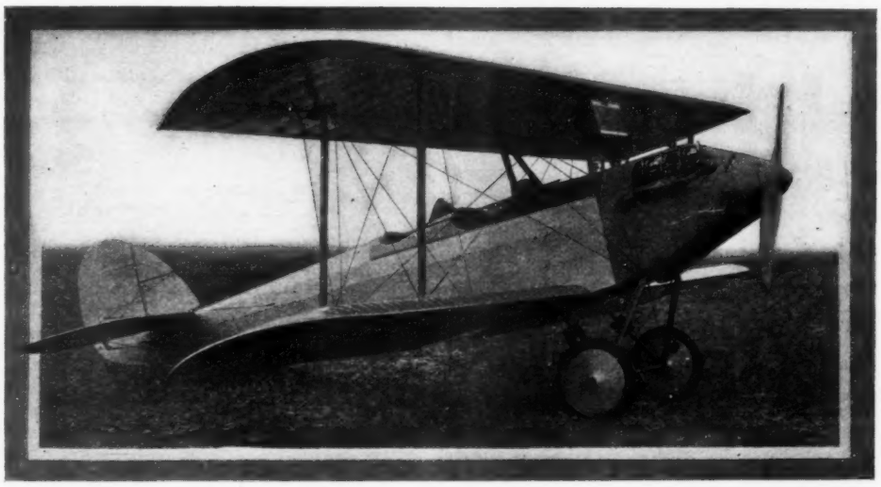

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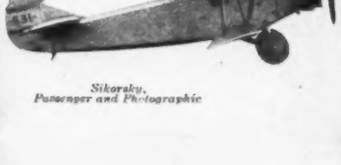

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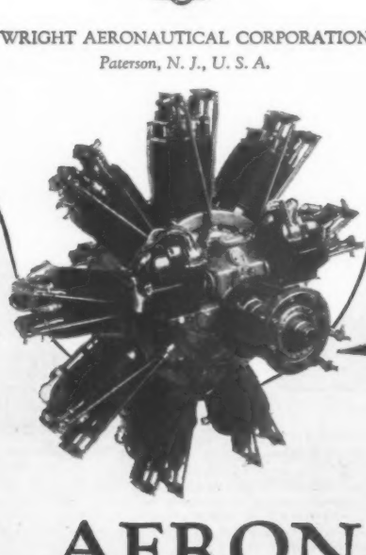

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VOL. XX FEBRUARY 8, 1926 No. 6

General Mitchell—Civilian

THE EXPECTED has happened. General Mitchell has sacrificed his Army career for his beliefs of air supremacy and is now prepared to open a campaign of education that will have an important influence on our National Defense.

The action of President Coolidge, as well as the War Department, in modifying the court martial verdict and, later, in accepting General Mitchell's resignation, is in line with what was to have been expected. Posterity, alone, can judge whether or not the present agitation is another of the recurrent and exaggerated special arm claims for supremacy. The submarine, the destroyer and the torpedo have had their days in court. The Army and Navy place aircraft in the same relative position to the battleship and the infantry. That the next war will prove General Mitchell's case is the belief of every airman out of the services.

Those who are of the opinion that the career of General Mitchell, as a national figure, is nearing its end, so far as influence with the public is concerned, are probably as mistaken as they have always been. While it may have appeared that the air champion has enjoyed great freedom of speech, it should be remembered that he always knew that every word that he spoke was to be questioned by his enemies in the Army. Now, the public will have the last word to say.

The Present Helium Situation

APART from a certain, though limited, commercial value, helium is of tremendous value from the defense standpoint to the nation, and this fact alone would indicate the need for the closest attention being given the production and conservation of this product. Helium gas is a unique national resource upon which this country possesses a virtual monopoly. Nevertheless, the supply of helium is being wasted at a terrific rate.

Despite the fact that the Secretary of the Interior has full authority to acquire for the Government, by purchase, lands which are rich in the gas, in order that a national reserve may be created, the department is powerless to carry out its obligations in this respect, owing to the fact that Congress has not made appropriation for this.

Meanwhile, it is estimated on good authority that approximately 600,000,000 cubic feet of this valuable gas are going to waste every year. Apart from the enormity of the waste itself, each year the difficulties of acquiring the necessary land reservations are increasing, owing to the spreading of industrial interests in other spheres over helium-bearing lands.

The military value of helium gas cannot, at the moment, be stated definitely, until the real sphere of the large airship in defense is settled. But, the usefulness of the captive observation balloon in warfare has not been disputed and the use of non-inflammable helium gas for captive balloons is important from the safety standpoint of the occupants of the balloon basket.

From the commercial standpoint, too, the real value of helium gas is entirely dependent upon the sphere of usefulness of the airship in commerce, but, if lighter-than-air aircraft are to be used at all in either military or commercial spheres, the importance of helium is paramount.

The United States possesses the only large supplies of this gas in the world. Italy possesses minor quantities, while, it is not, of course, surprising to find that Canada has a certain potentiality in this respect. There is one small gas supply in Ontario and one in Alberta, while a new supply has recently been located in Inglewood, Pearl County, near Toronto. But, generally speaking, helium production is almost exclusively confined to the United States and it would seem that the only logical step to be taken is in the direction of harnessing this valuable supply. The question is of immediate importance, and calls for immediate action.

Regulation Versus Insurance

WHEN attention is directed toward European civil aviation regulation as an example of what such air regulation may mean to progress in this field, it becomes increasingly noticeable how insurance, with the aims and objects of pure business and commerce in a background, has, in fact, superseded official control.

As a safeguard of the public and as an influence always exerting pressure for sound design, construction and piloting, and against their opposites, aircraft insurance is, at this moment, a far more important factor in British civil aviation than the government regulations are. It is, in fact, very probable that, with government regulation reduced to a minimum, ordinary common sense and the pressure of insurance would procure for civil and commercial aviation the best interests for all concerned.

As a striking example of this, it is most significant to observe that in Great Britain the aviation insurance group is, in fact, far in advance of government regulation in the direction of striving toward safety in operation. For instance, better insurance rates are quoted for machines embodying certain features which are in no sense directly encouraged by the government. While the government regulation has proved powerless in encouraging such safety and reliability measures as are obtained through the adaptation of the three-engine airplane, for example, insurance rates are actually considerably lower for machines with three or more engines than for single-engine types. Insurance will be one of the heaviest charges on commercial air transportation, as it has always been on all other forms of transportation, and anything which reduces this charge will not only be to the good of the operations from the financial standpoint but will indirectly indicate increased safety of the service. This will, consequently, have the effect which government regulation is supposed to have, but without the accompanying drawbacks and disadvantages.

The Guggenheim Aeronautics Fund

The First Meeting of Board of Trustees. The Preliminary Tentative Report of Possible Activities of Fund.

THE FIRST meeting of the Board of Trustees of the newly created Daniel Guggenheim Fund for the Promotion of Aeronautics was held on Jan. 26 at 120 Broadway, New York City. The trustees, as already announced in AVIATION, are: Rear-Admiral H. I. Cone; F. Trubee Davison; Dr. William F. Durand; Gen. George W. Goethals; Harry F. Guggenheim; Prof. A. A. Michelson; Dwight W. Morrow; Elihu Root, Jr.; John D. Ryan and Orville Wright.

Meeting of Trustees

At the meeting, Daniel Guggenheim was personally present and, in tendering to the trustees a check for $500,000 handed the Board a deed of gift, worded as follows:

> I give to the Daniel Guggenheim Fund for the Promotion of Aeronautics, Inc., Five Hundred Thousand Dollars, by means of my check for that amount, delivered simultaneously with this letter. This sum is to be used by the Fund in such manner as its directors may, in their unrestricted judgment, deem best for the advancement of the purposes of the Fund.
>
> I will transfer additional sums to the Fund from time to time within the next ten years upon the request of the Board of Directors of the Fund, provided that the aggregate of such additional sums shall not exceed $2,000,000, that such sums shall, in the judgment of the Board of Directors of the Fund, be needed for the purposes of the Fund, and that the requests for such sums shall be accompanied by plans for the expenditure of the sums requested. I have provided by will for the carrying out of this program by my estate, in case of my death.

The Board of Trustees, in accepting the gift, passed the following resolution:

> RESOLVED, that the gift of Mr. Daniel Guggenheim, as outlined in his letter of Gift to this Corporation, be accepted, and that a copy of such letter be attached to the minutes of this meeting and made a part thereof; and
>
> FURTHER RESOLVED, that this Board records its appreciation of the wise and constructive act of Mr. Daniel Guggenheim in creating the Fund for the Promotion of Aeronautics, and its belief that, through this generous gift, a real contribution may be made to the welfare and progress of mankind.

Election of Officers

The organization of the Fund was effected with the election of the following officers:

President, Harry F. Guggenheim, formerly U. S. Naval aviator overseas; formerly Chief Executive, Chile Copper Co., and executive in other mining and metallurgical companies.

Vice President & Treasurer, H. I. Cone, Rear-Admiral, Retired, U. S. Navy, who, in a distinguished career, filled, among other positions, that of Chief Engineer of the Navy, and Commander, U. S. Naval Aviation Forces, Foreign Service.

Admiral Cone will devote his entire time to the new organization, assisting H. F. Guggenheim, in its executive direction.

At the meeting on Jan. 26, Harry F. Guggenheim presented a preliminary report as to fields of effort which the Fund might undertake in its promotion of aeronautics. This report, and the possibilities included in it, had constituted the basis upon which Daniel Guggenheim decided to establish the Fund.

Harry F. Guggenheim, the new president of the Fund, announced, after the meeting, that the trustees were in agreement upon the point that it would not be the policy of the Fund to develop an extensive organization, or to duplicate or overlap existing efforts. The plan will be, wherever possible, to work through existing agencies.

The trustees of the Daniel Guggenheim Fund for the Promotion of Aeronautics have authorized the publication of a preliminary and tentative report as to the fields of effort which the Fund might undertake, as prepared by Harry F. Guggenheim, president of the Fund.

The following is a summary of the report, which will indicate, in a general way, the lines along which the Fund may operate:

From a preliminary study of the possibilities for the activity of the Fund, the field seems capable of division into four parts, as follows:

(1). Education; (2). Scientific Research; (3). Commercial Development; (4). Educational Information.

I. Education

A. Popularization of aviation in schools

B. Lectures at universities

A phase of aeronautical education, which the Fund might encourage, is that of a series of general aviation lectures to be delivered to seniors in civil and mechanical engineering at various important universities.

C. Establishment of aeronautical schools

Under the Daniel Guggenheim School of Aeronautics at New York University and the aeronautical courses at the Massachusetts Institute of Technology, student requirements will probably be covered for the present, at least in the East. The supply of graduates should, of course, not exceed the market. There is not the slightest doubt, however, that this equilibrium is merely temporary and that there will be opportunities for the establishment of chairs of aeronautics in the West, the South and Southwest. There may be strong justification at the present time for the establishment of a School of Aeronautics in one of the established engineering colleges on the West Coast, inasmuch as no aeronautical instruction is available west of Michigan. In considering such projects, one must not overlook the fact that at least one year must elapse before a chair could be established, another four years before students could be graduated and another, say, two years, at least, before these graduates will have "found themselves." So that, in considering our market for aeronautical engineers, we must look seven years ahead.

D. Donation of equipment

The Fund might consider the donation of special apparatus for aeronautical education and research in established educational engineering institutions.

E. Fellowships

Fellowships might be of two classes. The first class might allow carefully selected graduates in civil or mechanical engineering or other universities, to take up post-graduate work at, say, the Daniel Guggenheim School of Aeronautics. The second class might benefit postgraduates who had shown special aptitude for some branch of the art and wished to pursue studies abroad.

F. Instruction in aeronautical trade

The Fund might well consider getting in touch with trade schools and obtain, for a limited number of trade schools, used engines and planes, and parts of planes and engines which the trade schools could utilize for purposes of instruction in rigging and maintenance, and for the duplication of airplane and engine parts in their shops. The instructing staffs of these schools might be given opportunities to visit some aircraft factories and flying fields, and would soon find a way of including the practical mechanics of aircraft in their curriculum. It might be possible for the Fund to arrange for examinations and give certificates to ground engineers,

which would be of great value to the young mechanic and would also help operating companies in selecting their ground personnel.

G. Prizes for papers

H. Publication of bulletins and special texts

The Fund might inaugurate a series of bulletins, to be produced at irregular intervals

II. Scientific Research

The field in research is almost unlimited. There would seem to be a real danger in any attempt by the Fund to build up a research organization of its own. The normal tendency of such an organization is to expand to a wasteful degree and, with the lapse of time, not to concentrate on specific problems but to justify its existence and extend a worn out life by a constant search for problems, some of which would not be vital and all of which, combined, would probably involve great cost and preclude careful scrutiny of progress and expenses.

A. Selection of specific problems

The Daniel Guggenheim Fund for the Promotion of Aeronautics, Inc., might select certain problems (1) in fundamental aerodynamics and (2) in the nature of applied science, and finance their research. These investigations might be assigned to an organization or organizations best equipped to solve them, preferably to educational institutions under the general direction and careful scrutiny of progress and expenditure by the Fund. Typical examples of research in these two classes would be in (1) the helicopter, and (2) radio direction finders and leader cables.

B. Grant of funds for research

The Fund might consider an annual grant, over a period of years, for aeronautical research, to established aeronautical laboratories.

III. Commercial Development

A. Contests and prizes

The Fund might encourage the development of industrial types of airplanes, by holding contests for industrial planes, offering prizes, not only for the best commercial plane as a whole, but for some specific purpose, device, or point in design of importance to commercial aircraft, as, for example, a machine, stable under all aerodynamic conditions. In the weak financial state of the industry, probably no manufacturer could afford, without some form of encouragement, to attempt to build a plane to meet this condition, which could probably only be met, if at all, in the present state of development of the art, at a sacrifice of characteristics that would preclude its use in commerce. However, the development of such a plane, in itself perhaps of no use in commerce, might well mark a new era in aircraft construction.

Similar methods might be used to elicit improvement in engine design, although here it would seem that the financially strong motor industry needs no monetary encouragement. However, the advertising value of winning a Fund prize might be an extra incentive for new development.

Encouragement might also be given, by prizes and competition, to the development of auxiliary equipment used in air transport.

B. Economic demonstration

The Fund might set up a specification for the ideal commercial plane and contract for its design, either direct, with one or more designers of ability, or else make a widespread appeal for preliminary designs from which the most promising could be chosen.

C. Encouragement of invention and ideas in general

The Fund might give wide publicity, both in the United States and in Europe, to the fact that it is prepared to encourage inventions and novel ideas in general. This may bring a deluge of applicants for assistance whose ideas will be, for the most part, worthless but may also bring forth one or two ideas of supreme importance.

Besides giving due consideration to inventions, the Fund might welcome all ideas and suggestions for research and allow this to be generally understood. Its own ideas for research would thus be vivified by a stream of external suggestions for which due credit would always be given.

IV. Educational Information

The press covers every aeronautical event of any importance, with fair accuracy as far as facts go, but with inadequacy as far as explanations are involved. The Fund might intervene, only when an important aeronautical event or development is in the public eye, by:

1. An authoritative popular lecture
2. Broadcasting of the lecture
3. Brief but accurate statements sent to the press.

The Fund might help to promote any public spirited movement, of a strictly non-political nature, in the best interests of aeronautics, such as, for example, the development of air routes and airports.

In other words, every opportunity should be developed to increase the interest of the people in the subject, on the theory that such increased interest is one of the best methods of stimulating the interest and ambition of those who might be encouraged by such indication of public interest to devote themselves to this field of effort in a manner that might lead to important progress in it.

Aviation in Season.

The Huff Daland Petrel equipped with Hispano Suiza 150 hp. engine and used for aerial photographic and survey work by the Fairchild Aerial Surveys of Canada. The wheel undercarriage of the plane is replaced with one incorporating the use of skiis while the tail skid is likewise so equipped. In this way flights from snow-clad territory may be carried out successfully.

Night Flying Experiments in Europe

London—Paris Airway Lighted. Experiments with Neon Lights and Radio.

A NUMBER of new navigational devices are being tried out on a practical scale in a series of night flights along the air route between London and Paris. These follow the experiments with Neon gas beacons at Croydon airdrome, which were made last year, when observations were carried out from a captive balloon. The object was to obtain an idea of the appearance of the lights from the air. A scheme for 100 hours flying has been drawn up, to be carried out with the Vickers Vanguard airliner, fitted with two 650 hp., Rolls-Royce Condor engines. A description of this machine appeared in the Dec. 28, 1925, issue of AVIATION.

Automatic Control

If completed in time, a new form of gyro rudder and aileron will be tried out on the machine. These two, in combination, once certain mechanical problems have been overcome, will practically ensure that a machine will fly on a predetermined course for hours at a time without any attention from the pilot, except in regard to elevator control. Actually, with the gyro rudder control alone, pilots of Imperial Airways have, during experimental flights, left the cockpit and sat in the cabin for half an hour or more at a time, leaving the machine to fly itself, having once adjusted the tail trimming gear to get fore-and-aft balance.

The navigational aids for the pilot on the London-Paris route fall into two categories, and it is interesting to trace out the ground organization already in existence. There is to be in operation, the following:

CROYDON.—Neon beacon with a revolving light flashing 1 sec., eclipsed 1 sec. Flood lights, Neon ground lights, and obstruction marker lights.

TATSFIELD.—Automatic lighthouse, visibility 30 mi.

PENSHURST.—Emergency landing ground, lighthouse, visibility 12 mi. Automatic wind tee, illuminated at night and showing wind direction; visibility one mile.

MARDEN.—Small portable lighthouse.

LITTLESTONE.—Emergency landing ground near the coast. Lighting arrangements duplication of Penshurst.

LYMPNE.—Lympne and Littlestone are alternative coastal airdromes.

For the Channel crossing, the ordinary marine lighthouses are, of course, available, with the Verne lightship in mid-Channel as an additional guide and Cape Grisnez and Etaples lights to identify the French coast. Once over the coast, the following French facilities will be available by arrangement, though in this case the intermediate navigational lights are not automatic and operate only on request:—

ST. INGELVERT. Aerial lighthouse flashing Morse code for letter A. Flood lights for landing.

BERCK.—Lighthouse flashing D.

ABBEVILLE.—Lighthouse flashing F.

POIX.—Lighthouse flashing Z.

BEAUVAIS.—Lighthouse flashing G.

LE BOURGET—Terminal aerodrome with lighthouse and flood lights, obstruction marker lights, etc.

At a rough approximation, these landing fields are about 30 to 35 miles apart, and form a chain on the recognized London to Paris route. The experimental flights commence from Croydon one hour after sunset, and if Le Bourget is reached in time to turn around and start back before 10 o'clock, the return flight is made the same night. If the hour is later, in order to avoid the necessity of the French authorities maintaining men on the intermediate lights after midnight, the flight is postponed to the next evening. For a similar reason, no flight is started from Croydon after 9 o'clock.

Three Methods

On a clear night these facilities are adequate, but the pilot needs navigational help when there is a considerable amount of cloud about at any height from 500 ft. to 1,000 ft. It is here where the new apparatus is to be tested out from the commercial standpoint. The Vickers Vanguard is already fitted with all ordinary navigation instruments and cabin lights—its cabin approximates, in fact, to a Pullman car—and it also has the Reid turn indicator. The latter instrument is an invaluable aid to a pilot in cloud flying, when the absence of any visible horizon makes it exceedingly difficult for a pilot to maintain his machine on a steady and level course; but the pilot also needs to know that he is maintaining his direction.

Radio Direction Finding

One method is for him to send out a call sign which is picked up by two land stations, which, with the machine make a triangle of which two points are known. It is easy, therefore, to tell the pilot where he was when he first called, providing that there is no night distortion of the radio waves. A second method is to install in the machine a rotating loop system, with which any known radio station on the ground can be found. Then the navigator in the machine can find for himself his position without any reference to ground officials. The third system is by the use of wing coils in the machine connected to a balancing apparatus. The pilot wears headphones and hears, with varying intensity in each ear, the signal being picked up from one directing beacon, according to which side he is of the the direct path. When he is flying straight to it, there is silence in the headphones. This system seems to be the simplest of all for use on regular night flying routes with beacons at terminal and selected points. The pilot can test whether the system is in order by occasionally swinging off the course and picking up the buzz.

This system is almost identical with the type of radio beacon developed by the Air Mail service.

Fog Difficulties

By these means the actual flying problem between selected points, both at night and in cloud by day, will, it is expected, be simplified to the point of becoming commercial.

Continued on page 183

The Vickers Vanguard plane used in the night flying experiments.

Colonel Mitchell Resigns From the Army

The Resignation of Col. William Mitchell is Accepted.

COL. WILLIAM MITCHELL, formerly, Assistant Chief of the Army Air Service, on Jan. 27, tendered his resignation from the Army, to take effect on Feb. 1. Colonel Mitchell's letter of resignation was received at the office of Maj. Gen. Robert C. Davis, Adjutant General of the Army, to which it was transmitted by Maj. Gen. Samuel D. Rickenbach, Commander, District of Washington, in whose jurisdiction Colonel Mitchell has been since he went to Washington for the court martial.

The letter of resignation read as follows:

To the Adjutant General, Washington, D. C.
Through Commanding General, District of Washington:
Subject: Resignation.

I hereby tender my resignation as an officer of the United States Army, to take effect February 1, 1926.

WILLIAM MITCHELL,
Colonel, Air Service.

Court Findings Submitted

Two days previous to this, the court martial findings in the trial of Colonel Mitchell had, with the sentence, been submitted to President Coolidge for approval, together with the recommendations of the War Department. The President, after having reviewed the case, approved the sentence with modification.

The President's Ruling

The full statement of President Coolidge in this connection, follows:

"In the foregoing case of Col. William Mitchell, Air Service, the following action is hereby taken:

"A duly constituted court-martial has determined that the accused has been guilty of highly censurable conduct. The country has every reason to expect that its officers, especially those who hold positions of high rank and have had long experience in the service, will, at all times, be strictly obedient to the provisions of the law and the requirements of the rules by which they are governed.

"The court martial has found that, on Sept. 3, 1925, the naval airship Shenandoah was destroyed in a storm and that destruction involved the loss of fourteen persons of her crew. Two days later, and at a time when the naval airplane, PN-9, was supposed to be lost and all members of her crew drowned, the accused, taking advantage of the horror stricken state of the minds of the people and their natural desire to learn the causes of such losses and their readiness to listen to the views of persons having, or supposed to have, expert knowledge of such subjects, published his statement of Sept. 5, 1925, set out in the charges, in which he violently assailed the War Department and the Navy Department.

"He characterized the administration of those departments as incompetent, criminally negligent and almost treasonable. He charged those administering those departments with ignorance, suppression of the truth and with giving misleading, if not false, information concerning the Air Service to Congress and the people. The board of review finds that those statements were made without basis, in fact. In his statement of Sept. 9, 1925, set out in the charges, he employed expressions which cannot be construed otherwise than as breathing defiance toward his military superiors.

"The theory of government implies that every official, so long as he retains office, shall deport himself with respect toward his superiors. This is especially true of those in the military service. Unless this rule is applied, there could be no discipline in the Army and the Navy, without which those two forces would not only be without value as a means of defense, but would become actually a menace to society. Discipline is the whole basis of military training.

"The sentence is approved and will be duly executed, except as hereinafter provided. The Secretary of War reports that the present monthly pay of the accused, without the special pay allowed to those who are actually engaged in flying, is $483.33. His allowances for rental and subsistence are $156 per month. If he be granted his rental and subsistence and one-half of his pay, the amount is understood to be $397.67.

"There are certain statutory restrictions on the activities of Army officers, by which the accused may be hampered in securing employment to provide support for himself and those dependent upon him.

"Therefore, modifying the recommendations of the Judge Advocate General, and following the recommendations of the Secretary of War, the execution of so much of the sentence as adjudges forfeiture of all of the allowances and one-half of the monthly pay of the accused, making a total of $397.67 monthly, is, during the pleasure of the President, suspended.

CALVIN COOLIDGE."

Recommendations of Secretary of War

Before acting upon the case, President Coolidge received the following letter from Secretary Davis, transmitting the papers and making the recommendation in which the President concurred:

"Herewith is submitted the record of the trial of Col. William Mitchell, Air Service, by general court martial at Washington, D. C., commencing Oct. 28, 1925, and ending Dec. 17, 1925. There are also, with the record, the review thereof and opinion by the Board of Review in the Judge Advocate General's office, and the Judge Advocate General's indorsement thereon.

"The charges on which the accused was tried embrace eight specifications laid under the 96th. Article of War, and take up a little more than eighty-seven pages of the record. In substance, it was charged that the accused at San Antonio, Tex., on or about Sept. 5, 1925, made, uttered and published to certain individuals and news-gathering agencies, a statement, set out in full in each of the first four specifications; and that at San Antonio, Tex., on or about Sept. 9, 1925, he made, uttered and published to certain individuals and news-gathering agencies, another statement, set out in full in each of the last four of the specifications. Many of the expressions contained in these statements, as well as the whole tenor of each of those statements, were highly derogatory to the War Department and the Navy Department, and the officials exercising the administration thereof, without designation or names of individuals criticised.

"It was specifically alleged that, in thus making, uttering and publishing those statements, the accused conducted himself to the prejudice of good order and military discipline, and in a way to bring discredit upon the military service; in a matter insubordinate to the War Department, highly contemptuous and disrespectful thereto; and with intent to discredit the administration of the Navy Department. Such conduct is violative of the 96th. Article of War and is, under that Article, punishable at the discretion of the court trying the case.

"The accused pleaded not guilty. The prosecution proved beyond a reasonable doubt that the accused made, uttered and published the statements as alleged. The court found him guilty of all the specifications and the charge, and sentenced him:

. . . " 'To be suspended from rank, command and duty, with forfeiture of all pay and allowances for five years.' Subjoined to the sentence is the expression by the court: 'The court is thus lenient because of the military record of the accused during the World War.'

"The opinion of the board of review, in which the Judge Advocate General concurs, and in which I also concur, is that the evidence fully supports the findings and sentence, and that the record of trial is legally sufficient to support them.

"The board of review recommends that the sentence be approved but that so much of the sentence as adjudges forfeiture of all the allowances and one-third of the monthly pay of the accused be suspended during the pleasure of the President.

"The board of review is of the opinion that officers of the Army are so hedged about by restrictive statutes that it would be impossible for them to utilize in commercial pursuits, while remaining officers, much of the training which they have as officers. This is so to such an extent that it would make it difficult for the accused in this case to secure employment that would permit him to make adequate provision for himself and his dependents. The Judge Advocate General concurs in this view and also invites attention to the Presidential rule in force in regard to enlisted men, namely, that single sentence shall not forfeit allowances or more than two-thirds of the pay of one retained in the service.

"I concur in all the above recommendations except that I recommend that the execution of so much of the sentence as adjudges forfeiture of all the allowances and one-half of the monthly pay of the accused be suspended during the pleasure of the President. According to the figures furnished by the Judge Advocate General, this would permit the accused to receive, monthly, $120 rental allowance, $36 subsistence allowance, and $241.66 of pay, making the total of one-half of his pay, plus allowances, $397.66.

"I, therefore, recommend that the sentence, as thus modified, be duly executed. I am moved to recommend such modification of the sentence because of the fact that the accused is married and has children dependent upon him, and I do not believe that they should suffer any severe hardship as a result of his misconduct.

"Herewith is submitted, for your signature, draft of proposed action, should such action meet with your approval."

The resignation was accepted by the President on Jan. 29, to take effect from Feb. 1. Thus, has been brought to a close, Col. William Mitchell's military career of nearly 28 years; a career full of brilliant features and sparking activity. Colonel Mitchell is now a civilian.

Night Flying Experiments in Europe

(*Continued from page* 182)

but there still remains for development the actual flying away from and landing upon an airdrome in fog. This is the most difficult problem of all, but the Neon landing lights are one step toward its solution, and the other may possibly be a local system of radio control, based on the leader cable. This is buried in the ground along a predetermined path and emits a distinctive radio note which can be picked up by the pilot flying in the fog above. With this to guide him and some indication of his height, theoretically there is no reason why he should not be able to glide down to the unseen airdrome until the glow of the Neon landing lights, sunk beneath the surface, tell him to flatten out to land. Much remains to be done, but the advent of the three-engine machine and the development of all these other devices is gradually bringing the practical operation of flying and landing in fog nearer actuality.

The Latecoere Multi–Engine Bomber

Designed With a View to its Being Able to Withstand Total Disablement By Shell Fire

THERE IS one branch of military aeronautics in which France has taken a very distinct lead and this is in development of the multi-engine bombing plane. During the past few years both the Farman and Bleriot firms have been experimenting with four-engine planes. The latest Farman plane has carried a load of 13,200 lb. up to a height of 11,500 ft. This means that it could easily carry two 4,000 lb. bombs a distance of 200 miles and return to its base. The best American bomber would scarcely have one-half of this performance. As there are certain cases where the destructive power of one large bomb is considerably greater than that of several small bombs, the French tendency is of interest.

Proof Against Gun Fire

One of the more recent entrants into the field of the four-engine bomber is the Latércoère Co. The plane, which this company built, was originally equipped with four 265 hp. Salmson engines but the recent model, which is now undergoing tests at Villacoublay, is fitted with four French Jupiter radial air-cooled engines which develop 400 hp. each. No official flight performance figures have been issued, but the plane has several features which make it of interest. Throughout the design there has been an attempt to make the plane proof against machine gun fire and shell fragments. The result has been sought, not by providing protective armour but by a design whereby the destruction of one member would not cause the collapse of the entire plane. There are, for example, seven spars in the wing and the fuselage is constructed without longerons so that either part could be hit many times without seriously injuring the structure. The defensive armament of the plane consists of one machine gun group in the nose, one projecting from the center of the upper wing and one from a sort of a spur which projects from the center of the upper wing and one from a sort of a spur which projects from the lower part of the fuselage, just behind the trailing edge of the lower wing. This provides the plane with no blind sports except the area directly behind the tail surfaces. The armament is such that a squadron of these planes could, if attacked by pursuit planes, put up a veritable barrage of machine gun fire. The pilot and observer are protected by armour and enthusiasts for this class of plane claim it could not be brought down, except by an explosive shell of considerable calibre.

Dismountable for Shipment

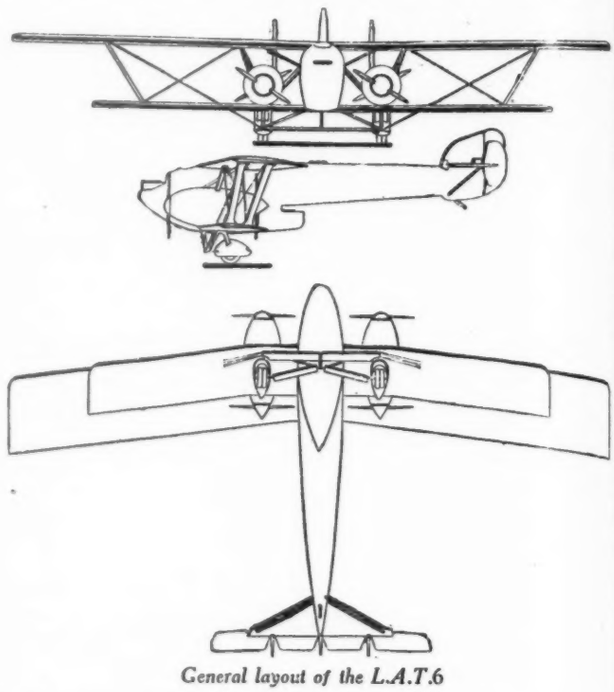
The L.A.T.6, as the plane is officially known, has a wing area of 1,291 sq. ft. The upper wing has a span of 90 ft. 8 in. and a chord of 11 ft. 6 in. The lower wing is much smaller, having a span of only 67 ft. 8 in. The fuselage extends to the upper wing, eliminating center section struts and giving a very spacious cabin. The wings can be demounted in sections for shipment on a French freight car. They are rectangular in form, with a slight dihedral and a very decided sweep back. There are four ailerons, those on the upper wing being balanced.

The wing frames are entirely made of metal. The upper wing has nine spars made of reinforced sheet metal, while the lower wing has seven. The cross bracing is at intervals of about six feet and consists of metal tubing. The covering of the wings is also of metal and adds to the structural strength. In static test, the structure withstood a load of 30 tons, indicating a safety factor of 7.5.

Metal Fuselage

The fuselage consists of a metal framework also covered with a metal covering. The fuselage contains a large cockpit for the pilot and observer, protected gasoline tanks which can be emptied in flight, radio cabin and a camera and moving picture installation. The machine gunners, it is noticeable, are allowed ample room. The tail control surfaces consist of a narrow balanced elevator and three balanced rudders.

The two pairs of engines in tandem are arranged on the lower wing. Each unit containing its own copper lubricating oil tanks and aluminum gasoline tanks. The latter are protected by an S.E.M.A.P.E. tank protector. The engine instruments are attached to the engine nacelles in such a way as to be visible from the pilot's seat.



General layout of the L.A.T.6

The undercarriage groups are placed under the engine mountings. Each group consists of double tire wheels with streamlined fairing. A rather complicated system of bracing is used to maintain the wheels in position but the structure looks rugged and accessible.

General Characteristics

The general characteristic of the plane, equipped with Salmson 265 hp. engines, are as follow:

Span	90 ft. 8 in.
Length	51 ft. 7 in.
Height	14 ft. 1 in.
Area	1291 sq. ft.
Weight Empty	9020 lb.
Fuel	3454 lb.
Useful Load	1584 lb.
Weight per sq. ft.	10.8 lb.
Weight per hp.	13.2 lb.
Speed	122 m.p.h.
Ceiling	16,728 ft.

It will be remembered that the Latécoère Co. commenced operations originally as an air transport company, employing the planes produced by other French manufacturers. The company later took up the construction of commercial aircraft for use on the Toulouse-Dakar and other airlines and has since carried on the construction of military type of airplanes.

Victors Over Ene my Aircraft

Air Service Fliers Who Brought Down One or More Enemy Aircraft.

SO MANY incomplete and incorrect lists of American Air Service pilots and observers who were victors over enemy aircraft during the War have been published that AVIATION *has decided to publish, in complete and official form, the entire list.*

ADDRESSES WANTED. *The Chief of Air Service writes to* AVIATION: *"If you can obtain the addresses and present occupations of the aviators who are out of service, this office would appreciate a copy of the information.*

Please send the address, and occupation if known, of any person listed below to AVIATION, *225 Fourth Ave., New York City.*—ED.

The U. S. Air Service does not use the title "Ace" in referring to those who are credited officially with five or more victories over enemy aircraft. It is not the policy of the Air Service to glorify one particular branch of aeronautics, aviation, or aerostation at the expense of another. * * *

The work of observation and bombardment is considered equally as hazardous as that of pursuit, but due to the fact that the observation and bombardment pilots are not called upon merely to destroy enemy aircraft, it should not be allowed to aid in establishing a popular comparison of results merely by relative victories.—Extract of letter, Director of Air Service, January 5, 1920.

The list below is that of the number of enemy aircraft destroyed from the air in combat by pilots and observers of the U. S. Air Service, A. E. F., in the World War. Cognizance is taken of only those "victories" actually confirmed by reports from the British, French, Italian Governments and General Orders of the U. S. First and Second Armies.

This list does not include victories obtained by members of the U. S. Air Service prior to their becoming such while in the service of Allied countries.

It does not include the three enemy airplanes destroyed *from the ground* by fire of the 2d and 6th U. S. Balloon Companies.

An addition of the victories listed herein does not furnish the number of enemy aircraft destroyed, due to the fact that the Air Service method of crediting gave each person who participated in combat one victory. Thus, if three were concerned in one fight to the destruction of one enemy airplane each United States combatant would be credited with one victory, if properly confirmed, but the enemy loss would still be but one airplane.

The following are the names of those who won "victories" against enemy airplanes and balloons, with the numbers of the last squadrons of which they were members. The figures under the column "Airplanes" and "Balloons" represent the victories officially credited. Where a name is marked with an asterisk (*) it will be noted the bearer was killed in combat. " R. A. F.," "Ind. A. F.," "French," and "Italian" denote that such men of the U. S. Air Service served as individual members attached to the Royal Air Force (British), Independent Air Force (British), French and Italian Air Services, respectively.

Five or More Victories

Name.	*Rank.*	*Last organization.*	*Airplanes.*	*Balloons.*	*Total*
Rickenbacker, Edw. V.	Captain	94	21	4	25
*Luke, Frank	2d Lieut.	27	4	14	18
Vaughn, George A.	1st Lieut.	17	12	1	13
Kindley, Field E.	Captain	148	12	.	12
Springs, Elliott W.	Captain	148	12	.	12
Landis, Reed G.	Captain	25	9	1	10
*Putnam, David E.	1st Lieut.	139	10	.	10
Swaab, Jacques M.	Captain	22	10	.	10
*Hamilton, Lloyd A.	1st Lieut.	17	6	3	9
Hunter, Frank O'D.	1st Lieut.	103	9	.	9
Wright, Chester E.	1st Lieut.	93	8	1	9
Baer, Paul F.	1st Lieut.	103	9	.	9
Cassady, Thomas G.	Captain	28	8	.	8
Clay, Henry R., jr.	1st Lieut.	148	8	.	8
*Coolidge, Hamilton	Captain	94	5	3	8
Creech, Jesse O.	1st Lieut.	148	8	.	8
Donaldson, John Owen	Captain	R.A.F.	8	.	8
Erwin, William P.	1st Lieut.	1	8	.	8
Jones, Clinton	2d Lieut.	22	8	.	8
Meissner, James A.	Major	94	7	1	8
*White, Wilbur Wallace	1st Lieut.	147	7	1	8
Biddle, Chas. J.	Major	13	7	.	7
Burdick, Howard	1st Lieut.	17	7	.	7
Chambers, Reed M.	Major	94	6	1	7
Cook, H. Weir	Captain	94	3	4	7
Holden, Lansing C.	1st Lieut.	95	2	5	7
Larner, G. De Freest	Captain	103	7	.	7
Robertson, Wendel A.	1st Lieut.	139	7	.	7
Rummel, Leslie J.	1st Lieut.	93	7	.	7
*Schoen, Karl J.	1st Lieut.	139	7	.	7
Sewall, Sumner	Captain	95	5	2	7
Stovall, William H.	1st Lieut.	13	7	.	7
*Beane, James D.	1st Lieut.	22	6	.	6
Brooks, Arthur R.	Captain	139	6	.	6
Campbell, Douglas	Captain	94	6	.	6
Curtiss, Edward P.	Captain	95	6	.	6
Easterbrook, Arthur E.	1st Lieut.	1	6	.	6
Guthrie, Murray K.	1st Lieut.	13	6	.	6
Hammond, Leonard C.	Captain	91	6	.	6
Hayes, Frank K.	1st Lieut.	13	6	.	6
Keating, James A.	Major	R.A.F.	6	.	6
Knotts, Howard C.	2d Lieut.	17	6	.	6
Lindsay, Robert O.	1st Lieut.	139	6	.	6
McArthur, John K.	2d Lieut.	27	6	.	6
McClure, David M.	1st Lieut.	213	6	.	6
Ponder, William T.	1st Lieut.	103	6	.	6
Porter, Kenneth L.	2d Lieut.	147	6	.	6
Stenseth, Martinus	Captain	28	6	.	6
Tobin, Edgar G.	Captain	103	6	.	6
Vasconcelles, Jerry C.	Captain	27	5	1	6
Vernam, Remington de B.	1st Lieut.	22	4	2	6
Badham, William T.	1st Lieut.	91	5	.	5
Bair, Hilbert L.	1st Lieut.	R.A.F.	5	.	5
Bissell, Clayton, L.	Captain	148	5	.	5
Buckley, Harold R.	Captain	95	4	1	5
Cook, Everett R.	Captain	91	5	.	5
Furlow, George W.	1st Lieut.	103	5	.	5
George, Harold H.	1st Lieut.	139	5	.	5
Gray, Chas. G.	Captain	213	4	1	5
Haight, Edward M.	1st Lieut.	139	5	.	5
Healy, James A.	Captain	147	5	.	5
Knowles, James	1st Lieut.	95	5	.	5
Luff, Frederick E.	1st Lieut.	25	3	2	5
Miller, Zenos R.	1st Lieut.	27	4	1	5
O'Neill, Ralph A.	1st Lieut.	147	5	.	5
Owens, J. Sidney	2d Lieut.	139	5	.	5
Ralston, Orville A.	1st Lieut.	148	5	.	5
Strahm, Victor H.	Major	91	5	.	5
Seerley, John J.	1st Lieut.	13	5	.	5
Todd, Robert M.	2d Lieut.	17	4	1	5
*Wehner, Joseph Fritz	1st Lieut.	27	.	5	5
Williams, Rodney D.	1st Lieut.	17	4	1	5

Four Victories

Name.	*Rank.*	*Last organization.*	*Airplanes.*	*Balloons.*	*Total*
Backus, David H.	1st Lieut.	49	4	.	4
Beverly, Belmont F.	Captain	96	4	.	4
Bridgman, Raymond C.	Captain	139	4	.	4
Campbell, Jesse F.	Captain	17	3	1	4
*Campbell, Morton L.	1st Lieut.	17	4	.	4
Dawson, Leo H.	1st Lieut.	166	3	1	4
Dillon, Paul R.	1st Lieut.	24	4	.	4
D'Olive, Charles R.	1st Lieut.	93	4	.	4
Este, J. Dickinson	Captain	13	4	.	4
Fontaine, Hugh L.	1st Lieut.	49	4	.	4
Garvie, Hugh A.	1st Lieut.	139	4	.	4
Guthrie, Raymond H.	2d Lieut.	11	4	.	4
Harding, Lowell S.	1st Lieut.	93	4	.	4
Heater, Chas. L.	Captain	11	4	.	4
Jones, Arthur H.	1st Lieut.	147	4	.	4
Kaye, Samuel, jr.	Captain	94	4	.	4
Lee, John B., III	2d Lieut.	24	4	.	4
Manning, James F., jr.	1st Lieut.	49	4	.	4
Maughan, Russel L.	1st Lieut.	139	4	.	4
Richardson, James M.	1st Lieut.	1	4	.	4
Schaeffer, H.	1st Lieut.	French	4	.	4
Shelby, Richard D.	Captain	139	4	.	4
*Shoemaker, Harold G.	1st Lieut.	17	4	.	4
Sieper, Frederick E.	2d Lieut.	91	4	.	4
Sperry, John A.	1st Lieut.	22	4	.	4
Tyndall, Frank B.	Captain	22	4	.	4
Weatherhead, Albert J., jr.	1st Lieut.	95	1	3	4
*Wicks, Glenn D.	1st Lieut.	17	4	.	4
Wyly, Laurence T.	1st Lieut.	148	4	.	4

Three Victories

Name.	*Rank.*	*Last organization.*	*Airplanes.*	*Balloons.*	*Total*
Abernathy, Thos. J.	1st Lieut.	147	3	.	3
Avery, Walter L.	1st Lieut.	95	2	1	3
Baker, Hobart A. H.	Captain	141	3	.	3
Baucom, Byrne V.	Captain	1	3	.	3
Bennett, John C.	1st Lieut.	139	3	.	3
Brewer, Leighton	1st Lieut.	13	3	.	3
*Brotherton, Wm. E.	2d Lieut.	147	2	1	3
Clark, George S.	1st Lieut.	104	3	.	3
Converse, Robert R. S.	1st Lieut.	13	3	.	3
Corley, James W.	2d Lieut.	1	3	.	3
Dickema, Willis A.	Captain	91	3	.	3
Douglass, Kingman	Captain	91	3	.	3
Edwards, Philip J.	2d Lieut.	11	3	.	3
Ford, Christopher W.	Major	213	3	.	3
Forshay, Harold J.	1st Lieut.	166	3	.	3
Freeman, Harry B.	1st Lieut.	13	3	.	3
Gaillard, Samuel P., jr.	1st Lieut.	213	2	1	3
Garlough, John L.	2d Lieut.	11	3	.	3
Garretson, Ray W.	Captain	100	3	.	3
Garver, John B.	2d Lieut.	25	3	.	3
Germer, Lester H.	2d Lieut.	139	3	.	3
Grant, Alfred A.	Captain	27	3	.	3
Grant, Sidney B.	1st Lieut.	88	3	.	3
Hall, Jas. Norman	Captain	94	3	.	3
Hambleton, John A.	Captain	213	3	.	3
Hartman, Ralph L.	1st Lieut.	93	3	.	3
Hoover, Wm. J.	1st Lieut.	27	3	.	3
Howe, David, W.	1st Lieut.	13	3	.	3
Hudson, Donald	1st Lieut.	27	3	.	3
Hudson, Henry B.	1st Lieut.	22	3	.	3
Jervey, Thomas M (Ord.)	1st Lieut.	91	3	.	3
Koepfgen, Leslie P.	1st Lieut.	20	3	.	3
Lawrence, Mortimer M.	1st Lieut.	104	3	.	3
Lambert, John H.	Captain	91	3	.	3
Little, Raymond J.	2d Lieut.	22	3	.	3
McCarthy, Walter H.	1st Lieut.	11	3	.	3

Name.	Rank.	Last organization.	Airplanes.	Balloons.	Total
McDermott, Cleveland W.	2d Lieut.	147	3	.	3
McDougall, Harry O.	1st Lieut.	100	3	.	3
McKay, Elmore K.	2d Lieut.	96	3	.	3
McKeown, Stuart E.	1st Lieut.	95	3	.	3
McLanahan, Alex. H.	Captain	95	2	1	3
McMurry, Ora R.	1st Lieut.	49	3	.	3
Mathews, A. F.	1st Lieut.	R.A.F.	3	.	3
Meyer, Rollin E.	1st Lieut.	28	3	.	3
Mitchell, John L.	Captain	95	3	.	3
Moore, Thomas L.	1st Lieut.	148	3	.	3
Moy, Gordon V.	1st Lieut.	139	3	.	3
Nelson, Paul D.	1st Lieut.	11	3	.	3
Norris, Sigbert A. G.	2d Lieut.	11	3	.	3
Oatis, Vincent P.	1st Lieut.	11	3	.	3
Ohrstrom, George L.	2d Lieut.	104	3	.	3
Peterson, David McK.	Major	95	3	.	3
Palmer, Wm. W.	Captain	94	3	.	3
*Patterson, Alfred B., jr.	1st Lieut.	93	3	.	3
Payson, Philip M.	1st Lieut.	166	3	.	3
Payton, Robert C.	2d Lieut.	11	3	.	.
Poler, Donald S.	Captain	25	1	2	3
Pope, John B., jr.	1st Lieut.	91	3	.	3
Porter, Robert B.	1st Lieut.	11	3	.	3
Porter, Chas. P.	2d Lieut.	147	3	.	3
Quinn, John J.	1st Lieut.	139	3	.	3
Redfield, John J.	1st Lieut.	Ind. A. F.	3	.	3
*Roberts, Ivan A.	1st Lieut.	27	2	1	3
Rorison, Harmon C.	1st Lieut.	22	3	.	3
Schenck, Alex. P.	1st Lieut.	49	3	.	3
Seaver, Arthur F.	1st Lieut.	20	3	.	3
Seevers, Raymond O.	1st Lieut.	139	3	.	3
*Seibold, George V.	1st Lieut.	148	3	.	3
Simonds, Francis M.	1st Lieut.	147	3	.	3
Slauson, Chas. G. S.	1st Lieut.	11	3	.	3
*Stiles, Robert H.	1st Lieut.	13	3	.	3
Stokes, John Y., jr.	1st Lieut.	20	3	.	3
Thaw, William	Lt. Col.	103	2	1	3
Tipton, Wm. D.	1st Lieut.	17	2	1	3
*Treadwell, Alvin H.	1st Lieut.	213	2	1	3
Veil, Charles	1st Lieut.	French	3	.	3
Wells, Horace P.	1st Lieut.	Ind. A. F.	3	.	3
Wilcox, Chas. H.	1st Lieut.	103	3	.	3
Yates, James S.	2d Lieut.	11	3	.	3
Young, David H.	Captain	96	3	.	3
Zistell, Errol H.	1st Lieut.	148	3	.	3

Two Victories

Allsop, Clifford W.	1st Lieut.	11	2	.	2
Andrew, Flynn L. A.	1st Lieut.	104	2	.	2
Arthur, Dogan H.	Captain	12	2	.	2
Avery, Stephen M.	1st Lieut.	13	2	.	2
Babcock, Philip R.	Major	1	2	.	2
Bartholf, Herbert B.	1st Lieut.	103	2	.	2
Biggs, Reuben D.	1st Lieut.	11	2	.	2
Boudwin, J. E.	1st Lieut.	R.A.F.	1	1	2
Borchers, Fred W.	1st Lieut.	163	2	.	2
Brewster, Hugh	1st Lieut.	49	2	.	2
Brown, Ben E.	1st Lieut.	28	2	.	2
Buford, Edw., jr.	Captain	95	2	.	2
Burger, Valentine J.	2d Lieut.	90	2	.	2
Callahan, Lawrence K.	1st Lieut.	148	2	.	2
Carney, Harry B.	1st Lieut.	28	2	.	2
Carruthers, Louis L.	1st Lieut.	93	2	.	2
Castleman, John R.	1st Lieut.	99	2	.	2
*Cheston, Galloway C.	1st Lieut.	R.A.F.	2	.	2
Clapp, Kenneth S.	1st Lieut.	27	2	.	2
Clark, Edwin R.	1st Lieut.	168	1	1	2
Clements, Wm. T.	2d Lieut.	17	2	.	2
Coleman, Wallace	1st Lieut.	135	2	.	2
Colson, Z. Wm.	1st Lieut.	49	2	.	2
Colton, Samuel H.	1st Lieut.	27	2	.	2
Conant, Rollis C.	2d Lieut.	168	1	1	2
Cooper, Alfred C.	1st Lieut.	11	2	.	2
Corse, Irving P.	2d Lieut.	R.A.F.	1	1	2
Cousins, John W.	Captain	24	2	.	2
Coyle, Artur J.	Captain	1	2	.	2
Crissey, John C.	2d Lieut.	22	2	.	2
Curry, John F.	Colonel	2d Army	1	1	2
De France, Smith	1st Lieut.	139	2	.	2
Diamond, Aubrey F.	1st Lieut.	25	.	2	2
Dixon, Frank A.	1st Lieut.	17	2	.	2
Dorsey, Geo. C.	1st Lieut.	148	2	.	2
Elliott, Robert P.	1st Lieut.	96	2	.	2
Fay, Samuel P.	1st Lieut.	91	2	.	2
Feinstein, Herman	2d Lieut.	166	2	.	2
Fisher, George F.	Captain	95	2	.	2
Follmer, Harold W.	1st Lieut.	93	2	.	2
Fort, Frank B.	2d Lieut.	8	2	.	2
Foster, Francis B.	1st Lieut.	88	2	.	2
Frost, John	1st Lieut.	103	2	.	2
*Fuller, Roswell H.	1st Lieut.	93	2	.	2
Folger, Harry T.	2d Lieut.	96	2	.	2
Giles, Benj. F.	1st Lieut.	168	1	1	2
Goulding, Wm. F.	1st Lieut.	93	2	.	2
*Gracie, Ralph D.	1st Lieut.	17	2	.	2
Gravaline, F. C.	Sgt. 1st Cl.	20	2	.	2
Grier, Hal I	1st Lieut.	11	2	.	2
Hardy, Eugene J.	1st Lieut.	28	2	.	2
Haskins, Joseph F.	1st Lieut.	96	2	.	2
Heinrichs, Waldo H.	1st Lieut.	95	2	.	2
Herbert, T. J.	1st Lieut.	R.A.F.	2	.	2
Hill, Maury	Captain	24	2	.	2
Hopper, Bruce C.	Captain	96	2	.	2
Houghton, Earle	1st Lieut.	91	2	.	2
Howard, Sidney C.	1st Lieut.	20	2	.	2
Jagoe, Walker M.	2d Lieut.	135	2	.	2
Jebb, Wm. T., jr.	2d Lieut.	28	2	.	2
Jeffers, John M.	1st Lieut.	94	2	.	2
Johnson, Oliver P.	1st Lieut.	25	2	.	2
*Keesler, Samuel R. jr.	2d Lieut.	24	2	.	2
Keith, Alex. H.	1st Lieut.	French	2	.	2
Kelly, Arthur H.	1st Lieut.	96	2	.	2
Kenney, Geo. C.	Captain	91	2	.	2
Knox, Walter B.	1st Lieut.	148	2	.	2
Lakin, Paul E.	1st Lieut.	96	2	.	2
Lennon, Thos. F.	1st Lieut.	27	1	1	2
Likely, Robert D.	1st Lieut.	135	2	.	2
Lindsley, Henry D., jr.	1st Lieut.	93	2	.	2
Lunt, Samuel M.	1st Lieut.	96	2	.	2
McCordie, Fletcher L.	1st Lieut.	88	2	.	2
McCormack, V. R.	1st Lieut.	139	2	.	2
McKeon, John W.	1st Lieut.	166	2	.	2
McLean, Chas. I.	1st Lieut.	148	2	.	2
Mell, Patrick H.	1st Lieut.	213	2	.	2
Merrick, Chas. I.	1st Lieut.	103	2	.	2
*Miller, John C.	1st Lieut.	12	2	.	2
Meyers, Oscar B.	1st Lieut.	147	2	.	2
Merrill, Linn D.	1st Lieut.	166	2	.	2
Morris, Edward M.	2d Lieut.	104	2	.	1
Nathan, Joseph H., jr.	1st Lieut.	135	2	.	2
Nelson, Carlyle	1st Lieut.	100	1	1	2
Newbury, Frank J., jr.	1st Lieut.	96	2	.	2
Newell, James M.	2d Lieut	French	2	.	2
Newell, Arthur E.	1st Lieut.	96	1	1	2
Noonan, Thos. W.	1st Lieut.	French	2	.	2
*Norton, Fred W.	1st Lieut.	27	2	.	2
*O'Donnell, Paul J.	2d Lieut.	96	2	.	2
Oyster, Norman W.	1st Lieut.	96	2	.	2
Parks, Victor, jr.	Captain	166	2	.	2
Pedler, Russell H.	1st Lieut.	166	2	.	2
Pegues, Josiah J.	1st Lieut.	95	2	.	2
Perry, Geo. W.	2d Lieut.	11	2	.	2
*Phelan, Richard	1st Lieut.	213	2	.	2
Plush, Lewis C.	1st Lieut.	49	2	.	2
Powers, Leo F.	1st Lieut.	88	2	.	2
Preston, Glen A.	2d Lieut.	99	2	.	2
Reynolds, John N.	Lt. Col.	91	2	.	2
Richards, Earl F.	1st Lieut.	22	2	.	2
Richards, John A.	1st Lieut.	11	2	.	2
Riley, Harold W.	1st Lieut.	24	2	.	2
Rollins, James S.	1st Lieut.	96	2	.	2
Rowland, Roger W.	1st Lieut.	27	2	.	2
Schmitt, Ralph S.	1st Lieut.	27	2	.	2
Scott, Richard M.	1st Lieut.	135	2	.	2
Simon, Louis C., jr.	1st Lieut.	147	2	.	2
Smith, Albert H.	1st Lieut.	28	2	.	2
Smith, Howard C.	1st Lieut.	* 213	1	1	2
Spatz, Carl	Major	13	2	.	2
Starkey, Henry C.	1st Lieut.	148	2	.	2
Stier, H. D.	1st Lieut.	R.A.F.	2	.	2
Stivers, C. D.	1st Lieut.	13	2	.	2
Stanley Gilbert	1st Lieut.	96	2	.	2
Telchan, Alexander	2d Lieut.	166	2	.	2
Taylor, Thorne C.	Captain	94	2	.	2
Ten Eyck, Walton B., jr.	2d Lieut.	96	2	.	2
Thompson, Stephen W.	1st Lieut.	12	2	.	2
Turnbull, Lewis F.	1st Lieut.	96	2	.	2
Turnure, George E., jr.	1st Lieut.	103	.	2	2
Waddell, Joseph	1st Lieut.	103	2	.	2
Wallis, James E.	Captain	91	2	.	2
Ward, Lawrence	2d Lieut.	166	2	.	2
Wheeler, Curtis	1st Lieut.	88	2	.	2
Willis, John T., jr.	1st Lieut.	20	2	.	2
Winslow, Alan F.	2d Lieut.	94	2	.	2
Woolley, Charles H.	1st Lieut.	49	2	.	2
Woodard, Granville O.	2d Lieut.	95	1	1	2

One Victory

Adams, Morton B.	1st Lieut.	90	1	.	1
*Aldrich, Perry H.	1st Lieut.	135	1	.	1
Alexander, Arthur H.	1st Lieut.	96	1	.	1
Alexander, Chas. W.	1st Lieut.	Italian	1	.	1
Alexander, Raymond	Corporal	20	1	.	1
Alexander, Stirling C.	1st Lieut.	99	1	.	1
Allein, Henry C.	1st Lieut.	28	1	.	1
Andrews, Harold W.	2d Lieut.	French	1	.	1
Archer, Hassel D.	2d Lieut.	11	1	.	1
*Armstrong, Henry G.	1st Lieut.	13	1	.	1
Armstrong, William J.	1st Lieut.	17	1	.	1
Ash, Thomas, jr.	1st Lieut.	24	1	.	1
Atwater, Benjamin L.	1st Lieut.	99	1	.	1
Austin, Richard S.	1st Lieut.	166	1	.	1
Bagby, Ralph B.	1st Lieut.	88	1	.	1
Bailey, Frederick W.	2d Lieut.	27	1	.	1
Baker, Edward D.	1st Lieut.	96	1	.	1
Baker, John M.	1st Lieut.	20	1	.	1
Baker, William F.	1st Lieut.	91	1	.	1
Ball, James E., jr.	2d Lieut.	Italian	1	.	1
Barksdale, E. H.	1st Lieut.	R.A.F.	1	.	1
Bates, Edmund E.	1st Lieut.	96	1	.	1
Baxter, George R.	2d Lieut.	49	1	.	1
Benell, Otto E.	2d Lieut.	135	1	.	1
Billard, Arthur M.	1st Lieut.	13	1	.	1
Binley, Howard C.	1st Lieut.	96	1	.	1
Black, Edward C.	1st Lieut.	166	1	.	1
Bleecker, Lyman C.	2d Lieut.	96	1	.	1
Braid, William G.	1st Lieut.	Ind. A. F.	1	.	1
Bridgman, Hugh	1st Lieut.	49	1	.	1
Briggs, Henry	1st Lieut.	96	1	.	1
Bronson, Tyler C.	2d Lieut.	147	1	.	1
Brown, Edward Lee	1st Lieut.	166	1	.	1
Brown, Mitchell H.	1st Lieut.	50	1	.	1
Burwell, Paul V.	Captain	25	1	.	1
Butz, Thomas F.	1st Lieut.	95	1	.	1
Cady, Louis V.	1st Lieut.	141	1	.	1
Calkins, William S.	Captain	French	1	.	1
Carl, Pitt F.	1st Lieut.	88	1	.	1
Carney, C. G.	1st Lieut.	99	1	.	1
Carpenter, Paul V.	1st Lieut.	166	1	.	1
Carr, Joseph H.	1st Lieut.	139	1	.	1

Name.	Rank.	organization.	Airplanes.	Balloons.	Total
*Carter, Arthur R.	1st Lieut.	11	1	.	1
Casgrain, Wilfred V.	1st Lieut.	95	1	.	1
Cates, Robert Z., jr.	1st Lieut.	94	1	.	1
Cauchon, Leo Bernard	1st Lieut.	24	1	.	1
Chamberlin, Willard J.	1st Lieut.	91	1	.	1
Chambers, Stuart M.	1st Lieut.	354	1	.	1
Chamness, William A.	2d Lieut.	French	1	.	1
Chapin, Roger F.	1st Lieut.	11	1	.	1
*Chapman, Charles W.	2d Lieut.	94	1	.	1
Chappel, Paul R.	2d Lieut.	141	1	.	1
Chase, Paul W.	2d Lieut.	8	1	.	1
Christian, Early B.	2d Lieut.	20	1	.	1
Cline, Charles S.	1st Lieut.	28	1	.	1
*Coates, Dana E.	1st Lieut.	11	1	.	1
*Coleman, Dewitt, jr.	1st Lieut.	Italian	1	.	1
Collins, Bayard F.	2d Lieut.	24	1	.	1
*Comegys, Edward T.	1st Lieut.	11	1	.	1
Comey, George Martin	1st Lieut.	88	1	.	1
Comstock, Keyon P.	2d Lieut.	166	1	.	1
Cone, Carroll	1st Lieut.	213	1	.	1
Conover, Harvey	1st Lieut.	90	1	.	1
Cooper, Leslie B.	1st Lieut.	27	.	1	1
Cooper, Merion C.	Captain	20	1	.	1
Cordes, Walter W.	1st Lieut.	French	1	.	1
Coryell, Ralph I.	1st Lieut.	96	1	.	1
Cosper, Lloyd C.	2d Lieut.	163	1	.	1
Cowan, Royal W. B.	2d Lieut.	24	1	.	1
Cox, Paul S.	1st Lieut.	93	1	.	1
Cullman, George R.	2d Lieut.	166	1	.	1
Cunnius, Percy E.	2d Lieut.	148	1	.	1
Curtin, John J.	1st Lieut.	135	1	.	1
*Dahringer, Homer W.	1st Lieut.	1	1	.	1
Davis, R. S.	1st Lieut.	French	1	.	1
Delana, Edward K.	1st Lieut.	91	1	.	1
Derge, David R	2d Lieut.	20	1	.	1
Devery, John J.	Captain	166	1	.	1
De Witt, John	2d Lieut.	94	1	.	1
Dolan, Charles H., jr.	1st Lieut.	103	1	.	1
Donaldson, Robert W.	1st Lieut.	94	1	.	1
Doolin, Bernard M.	2d Lieut.	22	1	.	1
Drew, Charles W.	Captain	13	1	.	1
Drummond, Frank C.	1st Lieut.	135	1	.	1
Duckstein, Arthur W.	1st Lieut.	1	1	.	1
Duncan, Asa N.	1st Lieut.	91	1	.	1
Eaton, Warren E.	1st Lieut.	103	1	.	1
Edwards, Brooke	1st Lieut.	20	1	.	1
Ellis, Arthur C.	1st Lieut.	96	1	.	1
Ellis, Robert Huber	1st Lieut.	R.A.F.	1	.	1
Ennis, Frank S.	2d Lieut.	147	1	.	1
Evans, D.	1st Lieut.	Ind. A. F.	1	.	1
Eypper, George W.	Captain	French	1	.	1
Faith, Clarence H.	2d Lieut.	103	1	.	1
*Farnsworth, Thomas H.	1st Lieut.	96	1	.	1
Ferrell, Enoch B.	2d Lieut.	24	1	.	1
Fish, F.	1st Lieut.	French	.	1	1
Fisher, Leroy B.	2d Lieut.	96	1	.	1
Fiske, Gardiner H.	1st Lieut.	20	1	.	1
Fleeson, Howard T.	1st Lieut.	12	1	.	1
Fleet, Charles C.	1st Lieut.	135	1	.	1
*Forbes, Earl	2d Lieut.	20	1	.	1
Foster, Austin T.	1st Lieut.	90	1	.	1
*Frank, William F.	1st Lieut.	20	1	.	1
Fulton, Richard W.	2d Lieut.	20	1	.	1
*Garnsey, Edward G.	1st Lieut.	94	1	.	1
Gastreich, Joseph V.	1st Lieut.	1	1	.	1
Gaylord, Bradley J.	1st Lieut.	96	1	.	1
George, Abram N.	2d Lieut.	28	1	.	1
Gill, Clarence S.	1st Lieut.	95	1	.	1
Goldthwaite, George E.	1st Lieut.	24	1	.	1
Graham, Percy W.	1st Lieut.	49	1	.	1
Gravatt, Charles M.	1st Lieut.	95	1	.	1
Green, M. Edwin	1st Lieut.	94	1	.	1
Greene, Paul S.	1st Lieut.	11	1	.	1
Grier, Alexander T.	2d Lieut.	90	1	.	1
Grylls, Greveys	1st Lieut.	22	1	.	1
*Gundelach, Andre A. H.	1st Lieut.	96	1	.	1
Guy, David W.	1st Lieut.	French	1	.	1
Gwinn, Joseph M., jr.	1st Lieut.	27	1	.	1
Hall, Herbert R.	1st Lieut.	95	.	1	1
Hall, James G.	1st Lieut.	French	1	.	1
Hall, Russell F.	1st Lieut.	95	1	.	1
Halley, S. Russell	Captain	French	1	.	1
Hamlin, Bryan	2d Lieut.	141	1	.	1
Hammond, Bradley B.	2d Lieut.	French	1	.	1
Hardendorf, James R.	1st Lieut.	28	1	.	1
Harrington, John R.	1st Lieut.	13	1	.	1
*Harris, David B.	2d Lieut.	20	1	.	1
Hart, Floyd H.	2d Lieut.	90	1	.	1
Hart, Percival G.	2d Lieut.	135	1	.	1
*Harter, Lester S.	1st Lieut.	11	1	.	1
Hartney, Harold E.	Lt. Col.	27	1	.	1
*Hassinger, Philip E.	1st Lieut.	22	1	.	1
Herron, James P.	1st Lieut.	147	1	.	1
Hewett, Ernest W.	1st Lieut.	27	1	.	1
Hexter, Antone N.	1st Lieut.	96	1	.	1
Hieber, Milo W.	2d Lieut.	49	1	.	1
Hicks, Samuel C.	1st Lieut.	20	1	.	1
Hill, Robert E.	1st Lieut.	27	1	.	1
Hoevelor, William A.	1st Lieut.	French	1	.	1
Holland, Stossard L.	Captain	24	1	.	1
*Hopkins, Stephens T.	2d Lieut.	96	1	.	1
Hubbard, Theodore H.	1st Lieut.	103	1	.	1
Hume, Henry W.	2d Lieut.	49	1	.	1
Husted, Merle R.	2d Lieut.	91	1	.	1
Irving, Livingston G.	1st Lieut.	103	1	.	1
Jannopoulo, Richard S.	2d Lieut.	91	1	.	1
Jenks, Henry J.	2d Lieut.	166	1	.	1
Johnson, Clare T.	2d Lieut.	20	1	.	1
*Jones, Eugene B.	1st Lieut.	103	1	.	1
Kearney, Thomas J.	1st Lieut.	R.A.F.	1	.	1
Kennedy, David S.	1st Lieut.	24	1	.	1
Kenyon, Hugo A.	1st Lieut.	103	1	.	1
Kingsley, Wilbert E.	2d Lieut.	90	1	.	1
*Kinney, Clair A.	1st Lieut.	49	1	.	1
Kirby, Maxwell	Major	94	1	.	1
Knight, Duerson	1st Lieut.	R.A.F.	1	.	1
Knox, Charles R.	1st Lieut.	20	1	.	1
La Force, Wm. W.	2d Lieut.	22	1	.	1
Laird, Clair B.	2d Lieut.	11	1	.	1
Lake, Horace A.	2d Lieut.	90	1	.	1
Landon, Edward C.	1st Lieut.	135	1	.	1
Lauer, Willard C. W.	Captain	25	1	.	1
Lawson, Walter R.	1st Lieut.	91	1	.	1
Leonard, Edmond C.	1st Lieut.	20	1	.	1
Lindsay, Edward W.	1st Lieut.	96	1	.	1
Lindsey, Leon M.	1st Lieut.	49	1	.	1
Loomis, Henry S.	1st Lieut.	213	.	1	1
Loomis, William F.	1st Lieut.	94	1	.	1
Lovett, William W.	1st Lieut.	French	1	.	1
Lowe, William O.	2d Lieut.	90	1	.	1
Lurie, Hyman H.	2d Lieut.	166	1	.	1
Lyman, A. Victor	1st Lieut.	27	1	.	1
MacDonald, Hunter	1st Lieut.	135	1	.	1
MacDonald, Edward K.	1st Lieut.	French	1	.	1
McClung, Carroll D.	1st Lieut.	28	1	.	1
McCoun, Thomas B.	1st Lieut.	French	1	.	1
McCubbin, Eugene L.	1st Lieut.	27	.	1	1
McFadden, Harvey P.	2d Lieut.	French	1	.	1
McGehee, James E.	1st Lieut.	213	.	1	1
McKay, James R.	Captain	49	1	.	1
McKimmon, John A.	1st Lieut.	168	1	.	1
McLennan, John C.	2d Lieut.	96	1	.	1
Mallory, Joseph B.	2d Lieut.	104	1	.	1
Mandel, Oscar	2d Lieut.	148	1	.	1
*Mandell, Samuel P.	1st Lieut.	20	1	.	1
Matalone, Clarence L.	2d Lieut.	French	1	.	1
Mathews, Richard P.	1st Lieut.	20	1	.	1
Matheson, Kenneth W.	1st Lieut.	213	.	1	1
Maxwell, Charles B.	1st Lieut.	93	1	.	1
Maynard, William R.	2d Lieut.	96	1	.	1
Melican, George D.	2d Lieut.	166	1	.	1
Merrill, George B.	1st Lieut.	91	1	.	1
*Merrill, John F.	1st Lieut.	28	1	.	1
Meyers, Harold	2d Lieut.	168	1	.	1
Milner, John K.	1st Lieut.	96	1	.	1
Mitchell, George	1st Lieut.	166	1	.	1
Monroe, Charles H.	1st Lieut.	103	1	.	1
Moran, William J. jr.,	2d Lieut.	91	1	.	1
Moreland, William H.	1st Lieut.	96	1	.	1
Moriarity, Louis P.	2d Lieut.	28	1	.	1
Moseley, Carlise C.	1st Lieut.	27	1	.	1
Munn, William A.	1st Lieut.	213	1	.	1
Murphy, Robert E. Lee	2d Lieut.	20	1	.	1
Neidecker, Bertrande C.	1st Lieut.	90	1	.	1
Nevius, Ruliff V.	1st Lieut.	27	1	.	1
Nordhoff, Chas. B.	1st Lieut.	French	1	.	1
Noring, Ernest G.	1st Lieut.	French	1	.	1
*Nutt, Allen	1st Lieut.	94	1	.	1
Oates, R. F.	1st Lieut.	94	1	.	1
Oberst, Clair R.	1st Lieut.	20	1	.	1
O'Cock, Albert	Sgt. 1st Cl.	8	1	.	1
Oliver, Bennett	1st Lieut.	148	1	.	1
Osmun, John E.	2d Lieut.	11	1	.	1
Page, Richard C. M.	Captain	88	1	.	1
Pancoast, Henry L.	1st Lieut.	96	1	.	1
*Parrott, Edmund A.	1st Lieut.	20	1	.	1
*Paskill, Reuben L.	1st Lieut.	R.A.F.	1	.	1
Patton, James L.	1st Lieut.	11	1	.	1
Peak, Lawrence I.	1st Lieut.	French	1	.	1
Peck, Roy L.	1st Lieut.	135	1	.	1
Perry, M. O.	2d Lieut.	147	1	.	1
Peters, Sidney V.	2d Lieut.	24	1	.	1
Phillips, George R.	2d Lieut.	50	1	.	1
Pointer, Henry	1st Lieut.	139	1	.	1
Popperfuss, Henry J.	1st Lieut.	95	1	.	1
Porter, Earl W.	2d Lieut.	French	1	.	1
Posey, John A.	1st Lieut.	French	1	.	1
*Potter, William C.	1st Lieut	20	1	.	1
Powell, E.	1st Lieut.	French	1	.	1
Powell, Leon W.	1st Lieut.	91	1	.	1
Powell, Clifford R.	1st Lieut.	French	1	.	1
Pressler, Warren S.	1st Lieut.	96	1	.	1
Presley, Curtis E.	2d Lieut.	13	1	.	1
*Preston, Harry C.	1st Lieut.	20	1	.	1
Puryear, George W.	1st Lieut.	95	1	.	1
Pyne, Percy R.	1st Lieut.	103	1	.	1
Rabe, Louis W.	2d Lieut.	148	1	.	1
Raible, Joseph, C., jr.	1st Lieut.	147	1	.	1
Rath, Howard G.	1st Lieut.	96	1	.	1
Raymond, Robert F., jr.	1st Lieut.	27	1	.	1
Ream, George D.	2d Lieut.	135	1	.	1
Reedy, George C.	2d Lieut.	French	1	.	1
Rhenstron, Elmer	2d Lieut.	95	1	.	1
*Rhinelander, Philip N.	1st Lieut.	20	1	.	1
Richardson, Glenn C.	1st Lieut.	20	1	.	1
Richardson, Roland W.	1st Lieut.	213	1	.	1
Ring, Thomas M.	1st Lieut.	20	1	.	1
Roberts, Meredith J.	1st Lieut.	95	1	.	1
Robertson, George S.	Captain	147	1	.	1
Rohrer, Lewis E.	1st Lieut.	90	1	.	1
*Roosevelt, Quentin	1st Lieut.	95	1	.	1
Rubel, James L.	2d Lieut.	24	1	.	1
Rucker, Edward W., jr.	Captain	27	1	.	1
Sanderhoff, Raymond	2d Lieut.	8	1	.	1
Sayre, Harold H.	2d Lieut.	11	1	.	1
Schary, Harry A.	2d Lieut.	166	1	.	1
Schauffler, William G., jr.	Major	90	1	.	1
Schneider, Albert J.	1st Lieut.	17	1	.	1
Schock, Leland D.	2d Lieut.	R.A.F.	1	.	1
Schlotzchauer, Harry A.	1st Lieut.	91	1	.	1
Schricker, John W.	1st Lieut.	91	1	.	1
Schultz, George W.	2d Lieut.	20	1	.	1
Screggie, Eugene R.	1st Lieut.	94	1	.	1
Search, Henrick M.	1st Lieut.	24	1	.	1
*Shaw, Irwin D.	1st Lieut.	R.A.F.	1	.	1

Name.	Rank.	Last organization.	Airplanes.	Balloons.	Total
Shearman, William Hugh	2d Lieut.	17	1	.	1
Shelly, Ralph A.	1st Lieut.	96	.	.	1
Sherry, Alden B.	1st Lieut.	94	1	.	1
Shidler, Horace	2d Lieut.	11	1	.	1
Showalter, Floyd M.	1st Lieut.	17	1	.	1
Signer, J. W.	1st Lieut.	88	1	.	1
Smart, Lawrence L.	1st Lieut.	135	1	.	1
Smith, Philip G.	Sgt. 1st Cl.	8	.	1	1
Smith, Perry H.	2d Lieut.	96	1	.	1
Smith, Ray	2d Lieut.	8	1	.	1
Smith, Walter J.	1st Lieut.	24	1	.	1
Snoke, Ralph W.	1st Lieut.	17	1	.	1
Sparks, Wiley S.	1st Lieut.	94	1	.	1
Stahl, Walter A.	1st Lieut.	11	1	.	1
Steele, Richard W.	2d Lieut.	166	1	.	1
*Stephenson, MacCrea	1st Lieut.	11	1	.	1
*Stephenson, Wayne B.	1st Lieut.	28	.	1	1
*Stevens, John H.	2d Lieut.	147	1	.	1
Stewart, Robert S.	1st Lieut.	96	1	.	1
Stewart, William F.	1st Lieut.	27	1	.	1
Stickney, Henry E.	1st Lieut.	French	1	.	1
*Strauch, Harry H.	1st Lieut.	11	1	.	1
*Stuart, William A.	1st Lieut.	96	1	.	1
Sutherland, Paul	2d Lieut.	Ind. A. F.	1	.	1
Summersett, James A.	Captain	96	1	.	1
Sumner, Harlan R.	1st Lieut.	139	1	.	1
Swinebroad, Albert W.	2d Lieut.	24	1	.	1
*Taylor, Everett A.	2d Lieut.	20	1	.	1
*Taylor, Raymond C.	1st Lieut.	96	1	.	1
Taylor, William H.	1st Lieut.	95	1	.	1
Thomas, Ralph C.	2d Lieut.	96	1	.	1
*Thrall, Loren R.	2d Lieut.	11	1	.	1
Todd, Van Winkle	1st Lieut.	103	1	.	1
Townes, Robert F.	1st Lieut.	20	1	.	1
Thompson, A. L.	1st Lieut.	96	1	.	1
Trimble, J. S.	Sgt. 1st Cl.	96	1	.	1
*Turner, Henry E., jr.	1st Lieut.	20	1	.	1
Tytus, William G.	Captain	1	1	.	1
Urband, Edward M.	1st Lieut.	135	1	.	1
Usher, George L.	1st Lieut.	135	1	.	1
Vail, William H.	1st Lieut.	95	1	.	1
Van Heuvel, John W.	1st Lieut.	91	1	.	1
*Vann, Grover C.	1st Lieut.	95	1	.	1
Wanser, Paul C.	1st Lieut.	166	1	.	1
Warner, Donald D.	1st Lieut.	96	1	.	1
Waring, William W.	1st Lieut.	11	1	.	1
Waters, George G.	1st Lieut.	147	1	.	1
Way, Pennington H.	2d Lieut.	96	1	.	1
Weatherbee, R. Noble	1st Lieut.	93	1	.	1
Weirick, Arthur M.	1st Lieut.	213	1	.	1
Weaver, A. E.	1st Lieut.	166	1	.	1
Wells, Roe E.	2d Lieut.	24	1	.	1
*Weimer, J. H.	2d Lieut.	20	1	.	1
Weingart, C. C.	1st Lieut.	24	1	.	1
Wentworth, John	Captain	49	1	.	1
*West, Karl G.	1st Lieut.	20	1	.	1
*White, Sidney W.	1st Lieut.	27	1	.	1
Whiting, George C.	2d Lieut.	148	1	.	1
Williams, Bertram	1st Lieut.	96	1	.	1
Winslo, Paul S.	1st Lieut.	R.A.F.	1	.	1
Wise, George T.	2d Lieut.	17	1	.	1
Wise, Solomon	1st Lieut.	French	1	.	1
Wiser, Guy B.	2d Lieut.	20	1	.	1
Woitishek, Louis A.	1st Lieut.	24	1	.	1
Wood, Harry T.	Captain	24	1	.	1
Woolfolk, Albert S.	1st Lieut.	20	1	.	1
Young, John S.	1st Lieut.	90	1	.	1

The Spain–Argentina Flight

Transatlantic Flight Successfully Completed.

Comdr. Ramon Franco and his companions successfully completed the first leg of their projected flight from Spain to Argentina on Jan. 22, without untoward incident. The flight, which was from Palos to Las Palmas, Canary Islands, was covered in a flying time of 8 hr.

On Jan. 25, the Dornier Wal seaplane, Ne Plus Ultra, made a short fifteen minute flight across the Canary Islands to Gando Bay preparatory for the hop to the Cape Verde Islands. Gando Bay is on the east coast of Grand Canary Island, the principal member of the Canary group. Las Palmas is near the northern tip of the island.

Second Leg of Flight

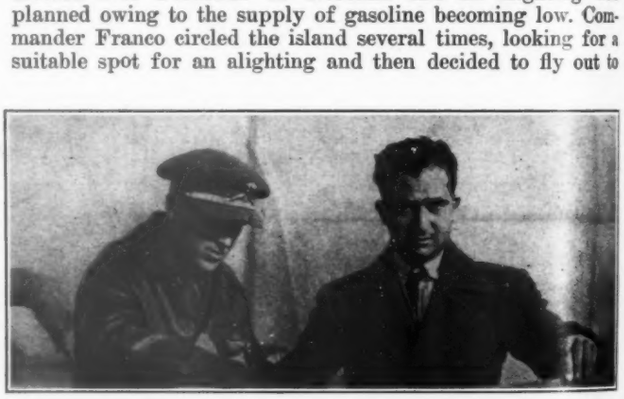
At 8:00 a.m. on Jan. 26, the seaplane left Gando Bay on the long flight to Porto Praya in the Cape Verde Islands, which are 1,056 miles from the Canary Islands. The flight was made with perfect success, the engines, Napier Lion type, developing 450 hp., functioning well. Porto Praya was reached the same day at 5:55 p. m., after a flight of 9 hr. 55 min. The weather was good throughout the flight.

The Longest Hop

On coming ashore at Porto Praya, the men were received by the Governor of the Cape Verde Islands and were given a great ovation by the entire populace. The town Praya was illuminated by night in honor of the visitors. On the following day no time was lost in overhauling the plane in readiness for the continuation of the flight to the Brazilian coast. The take off for Pernambuco was planned for Saturday, Jan. 30, and it was hoped that the flight could be made without an alighting, to Pernambuco, which however, proved to be unwise. Much time and thought was spent in deciding upon an advantageous place from which to commence the long ocean flight, the longest leg in the whole undertaking.

On Jan. 30, as arranged, the Ne Plus Ultra, in command of Comdr. Ramon Franco, left Porto Praya, bound for Pernambuco. At 6:10 a.m., the seaplane was towed out into Ribeiro do Infierno Bay off Porto Praya by the cruiser Blas de Lizo and took off, heading in the direction of Pernambuco. During the entire flight, Commander Franco was in touch with land by radio, frequent messages reporting the progress of the flight.

After a continuous flight of about fifteen hours, the plane arrived over Fernando do Noronha and an alighting was planned owing to the supply of gasoline becoming low. Commander Franco circled the island several times, looking for a suitable spot for an alighting and then decided to fly out to sea and alight there. This done, the seaplane was towed into Concepcion Bay. Three men were on board the plane. These were, Commander Franco, together with Capt. Ruiz de Alda, relief pilot and Pablo Rada, mechanic. Lieutenant Duran had been left behind at Porto Praya in order to leave a greater disposable load for fuel. The arrival at Noronha was at 8:00 p. m. on the evening of Jan. 30.



The Spanish Fliers. Comdr. Ramon Franco (right) and Capt. Ruiz de Alda.

The night was spent at Noronha and, at 1:05 p.m., on Jan. 31, the Ne Plus Ultra left for Pernambuco, a distance of 279 miles. Pernambuco was reached without incident after a flight of 3 hr. 40 min. The time of arrival was 4:45 p. m. The reason for the late start from Noronha was due to the fact that, owing to the rough weather, it was necessary for the fliers to remain aboard their plane all night off Noronha.

A delay of a few days is inevitable at Pernambuco owing to a damaged propeller (caused by severe weather conditions which made it necessary to remain at sea all night at Noronha) which must be replaced. A new one was immediately dispatched.

AIR TRANSPORTATION

Czechoslovakian Air Line Projects

Interest in commercial aviation in Czechoslovakia has increased considerably during the past few months. With the signing of the Locarno pact, the resumption of the Prague-Strasbourg-Paris air line will be possible, and negotiations on the subject probably will be opened in the near future.

Prague-Trieste Service Planned

Two proposals have been made to the Ministry of Public Works for the establishment of commercial air service between Prague and Trieste, to be extended to Berlin as soon as conditions permit. The proposals covering this project have been made by (1) The Syndicate of Czechoslovakian Airplane Manufacturers, established for the purpose under the name of the Czechoslovak Air Navigation Co., in which the participants are Breitfeld & Danek Co., Laurin & Klement, J. Walter & Co., and the Avia airplane factory, all local firms interested in the manufacture of airplanes, engines or parts; (2) a second group, the individual participants of which have not been made known. Both companies have stipulated, in their proposals, that they will use machines of domestic manufacture and will employ personnel of Czechoslovakian origin.

It is understood that the Ministry of Public Works has approved the projects and that they are now awaiting action by the ministerial council of the Government.

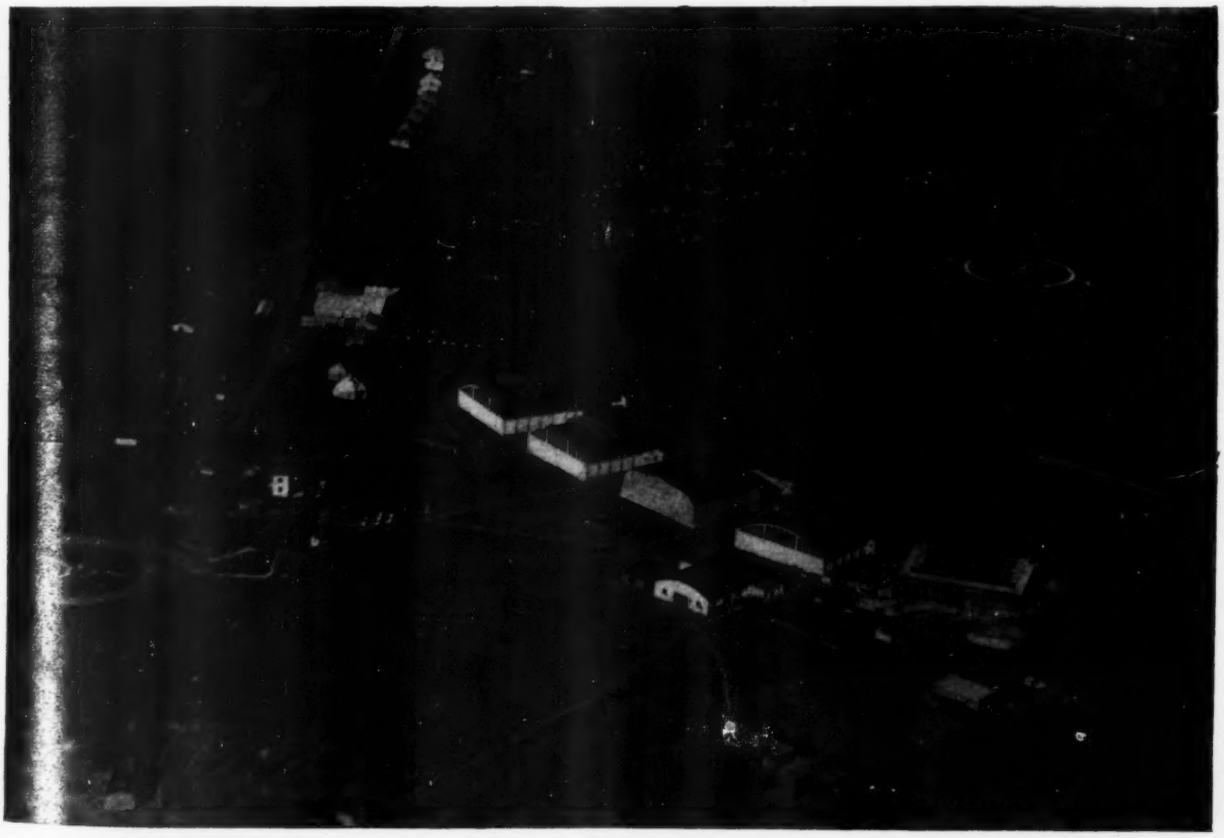
The Skoda Works are shortly to enlarge their works, in order to organize more thoroughly the department now manufacturing airplanes. They also contemplate the construction of a modern hangar.

The Rumanian Government has ordered, from Czechoslovakia, 75 airplanes of the Avia type. This machine was victorious at the international airplane contest in Italy, and it is believed that this success influenced the Rumanian Government to award the order to the Czechoslovakian manufacturers.

Aviation in Czechoslovakia has grown very rapidly during recent years and the attitude of the Chechoslovakian people toward its development is extremely favorable. The airport at Prague (known as Praha in the native tongue) has developed to such importance that it is now one of the busiest airports in Europe, with five or six of the most important air routes passing through or terminating thereat.

German Freight Air Transport

The future of German aviation lies in the transportation of goods and not of passengers, it is thought by many. At any rate, goods transport by air has enormously increased of late, not only from end to end of the country, but from across the borders. During November, according to statistics published by the Aero Lloyd, the following manifold goods—to mention only some of the kinds—were conveyed by air to their various destinations: books and papers; electric and chemical articles; automobile, motorcycle and pianoforte parts; clothing and textiles of every description; flowers from the Riviera; musical instruments; films; hides; glass and porcelain; lamps; precious metals, and many kinds of live stock, including canaries and other birds, and German sheep dogs.



The Prague airport, Chechoslovakia, one of Europe's finest commercial air terminals. It is a government owned field, available for civil flying and is, in dimensions, 1600 yd. by 1000 yd. Among the air lines which pass through or emanate from this airport are: London-Cologne-Prague-Constantinople; Paris-Prague-Warsaw; Prague-Budapest-Bucarest; Prague-Bratislava; Prague-Vienna

What Pilots Think About Air Legislation

Pilots Continue to Express Views on Legislation.

Experience Before Carrying Passengers

It is pure bunk to say that unlicensed pilots have made flying unsafe. I know men who have been flying for eight to ten years who haven't licenses. Experience is the best remedy for unsafe flying. I believe it would be a good thing if pilots were required to have at least forty hours in the air before they were allowed to carry passengers. I have had about 1400 hours in the air and find that I learned much after my first hundred hours. A brand new pilot can get a license in fifteen or twenty hours and prove to be anything but a safe flier. I find that nine out of ten accidents are caused by planes with not enough power cracking up when trying to take off over fences. I think flying is too new to have any regulation yet. I have been flying a Swallow lately, but have flown about all that we have in the country except the racers or some of the late Army ships.

I find that passenger carrying at a low price is very profitable. I carried about 3500 passengers last year, without any accidents.

R. W. Shrock,
Marceline, Mo.

The Experience of Nine Years

I can give your readers the result of my experience in nine years of commercial flying.

I believe that Senator Bingham is doing the necessary thing to bring commercial aviation to the front. I think the principles of his bill are beneficial, although some of the regulations pertaining to student fliers should be altered to allow them to secure actual commercial flying experience, by permitting them to do flying of a commercially safe nature; namely the carrying of freight or express cargos, but not allowing them to carry passengers until such a time as experience has proven their ability.

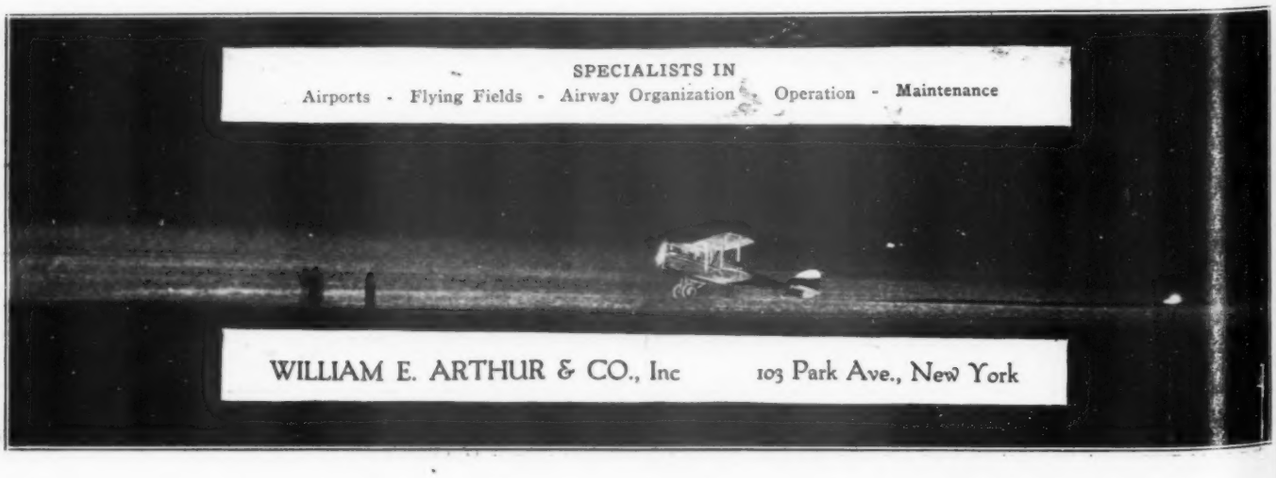
I believe that aviation will benefit by regulations governing the qualifications of pilots who are permitted to carry passengers. The sooner the public is assured that they are riding with pilots of proven ability and competence, the sooner they will take advantage of aviation. I firmly believe that a student aviator, who entices the public into paying for a ride in an airplane, which is not airworthy, or which is not piloted by a man of proved ability, or who has not proved by test that he is capable of handling an airplane under adverse conditions, should be guilty of an accessory to manslaughter. In some cases, where fatal accidents occur, he would be guilty of actual murder, understanding, as we do, that the general public is ignorant of the hazards connected with the flying.

It is nonsense for anyone to say that flying is not hazardous even with the best of pilots. It is more nonsense for one to say that a man is capable of competent flying because he has spent about two or three weeks and a couple of hundred dollars at some flying field.

There are exceptions, however, as to the ability of students. Nevertheless, it takes many hours of strenuous flying to honestly declare a student competent to carry the general public as passengers. Of course, if he has taken it up for a hobby, then he should be restricted to enjoying the hobby alone and not hamper the aviator who is in the business for a living. Aviation will not be patronized commercially until the public is assured that all personnel connected with the companies offering flying services are regulated, both as to each individual's ability and the air worthiness of the equipment used.

I am heart and soul for the advancement of commercial aviation, as the demand for passenger carrying and joy rides, even now, does not warrant the operation of a first-class flying field, for this purpose only. I find, in managing one of the most up-to-date fields in Chicago, that Sundays and holidays pay fairly well from joy rides but through the week, even in such a great city as this, there is very seldom one real commercial trip taken. If well equipped fields are to be maintained, they must have work, on the week days, of a commercial nature. We won't get it until we have the business man's confidence and we won't get that until we have proof that our equipment and personnel are competent and capable. We, who are in the business, must sacrifice the immediate uncertain profits for an educational program that will, in record time, put the general public in sympathy with commercial aviation and at the same time put the necessary confidence in the public which will and can only be rewarded by commercial patronage.

Obsolete equipment is being used today at many of our flying fields throughout the country. Even the old time fliers are hindering themselves by selling aircraft which are unsafe, to ignorant students and the public. I believe that two-thirds of the students taking up aviation are boys who have worked hard to save a few hundred dollars. They learn to fly at some flying school—in some cases an irresponsible one—for about one hundred dollars, and are then sold some old delapidated plane for a few hundred dollars and other good and bad security. They solo a dozen times; fill up with gas and fly to some small town to make their fortune. They advertise unregistered reputations that cannot officially be disputed. They put on an acrobatic exhibition by skidding, slipping and


SPECIALISTS IN
Airports - Flying Fields - Airway Organization - Operation - Maintenance
WILLIAM E. ARTHUR & CO., Inc
103 Park Ave., New York

falling all over the sky. The public is uninformed and imagines them to be wonderful pilots. A few trips are taken by thrill seekers. Soon the motor quits and the result is a crash which in many cases is fatal to someone. Then aviation suffers of course. It isn't the individual who should be considered; it is commercial aviation.

Just two weeks ago, I was visiting one of our southern flying fields. Naturally, over Sunday, I visited the field to see the passenger carrying. There were three or four new planes doing a good business. There was also a student working on the tail skid of on old delapidated Avro that he had purchased recently, being assisted by a couple of enthusiastic boy friends of his. He recognized me and came over to ask me if I would make a few landings with him, to which I replied that I had quit that kind of flying years ago. He, of course, felt insulted. I advised him, "The best thing for you to do for your own benefit and everybody else's, is to touch a match to your plane". A flier of about 70 hours time came along and was asked to make a few landings. He readily answered that he would fly anything with wings on it. The old banging rotary was started and the whole plane rattled like an electric riveting machine. This happened at approximately 3:00 p.m., and at 3:45 p.m. I was in the adjoining cornfield pulling these two from the wreckage.

Now, the reason I refer to this incident is because the experienced fliers who were doing the business that they had waited all week for, were putting their planes away, because the crowd had disappeared as if some fairy had faded them away with a magic wand. One of the oldest fliers present walked over to me and said, "Jack, commercial aviation is two years further away now than it was two hours ago," with which I naturally agreed.

We teach students to fly, but we do not enthuse them with the idea that they can learn in two or three weeks' time and immediately carry passengers with a plane that we can sell them for about three or four hundred dollars. For the future benefit of commercial aviation, I discourage passenger carrying with all my students, until such time as they are confident enough of themselves to take their own mother or sister for a ride. You will find that, in most cases, this never occurs before several months or sometimes years. I believe that it is every aviator's duty, to further the progress of commercial aviation, even though it temporarily prevents a certain income derived from students.

My experience has been that I cannot honorably give a student the necessary time and individual instruction that is essential in turning out a thoroughly taught student, for less than $250.00. For the benefit of future commercial aviation, I don't want to turn out any other type. We are doing all we can to educate passengers to "know your pilot" before they ride. If we can eliminate accidents we can advance commercial aviation.

We use brand new Swallow airplanes for instruction and when I have a class of students on the line for inspection, I use every effort possible to impress on them a thorough understanding of the importance of strict inspection. I do all I can to show them the dangers of overlooking any one part of the plane. I also do all I can to discourage them to purchase or have anything whatever to do with the operation or flying of any obsolete type of plane. I will wager that of my nine students under instruction at present, none of them would fly a plane that was not thoroughly tested or up-to-date. All planes need testing and this should be done by someone designated by the government. A civilian test pilot should be equipped with a parachute and be paid by the owner for thoroughly testing each plane that is to be sold and furnish the owner with a record for future use. The same test should be required periodically of each plane used in the commercial transportation of passengers.

I am not a prophet and I do not want to prophesy any catastrophies, but it is my candid opinion that if aviation is regulated by a civilian committee, with district managers to regulate and govern flying, pilots and aircraft, that the public will quickly learn the advantages, and commercial aviation will come to the front.

I believe it is the government's duty to protect the public from these hazards. I believe that the Army and the Navy should be prohibited from selling obsolete aircraft to civilians for commercial purposes. If the airplanes are any good, they should keep them themselves; otherwise, junk them.

I believe that all government flying fields and National Guard fields should be made available to transient aircraft that are so regulated. When a civilian lands on one of these fields, he is now denied the privilege of using the hangar, even though there are no ships at all in them. It is not economical to have these facilities standing empty, with four or five enlisted men and one or two commissioned officers detailed to hang around these places with nothing whatever to do, when they are being paid by taxpayer's money. They could get exercise housing commercial ships that are trying to make a living. I have talked to soldiers stationed at these places and noted how fat and lazy they get taking care of one or two Army planes that may arrive each week. If any of the civilians, using these privileges, abuse them, they should be denied the use of the field. I see no logical reason why everyone should be denied the accommodations merely because one ex-army captain, as I understand it, took advantage of the opportunity on a southern field which resulted in the order prohibiting civilians using a government hangar, especially when there is room.

The air mail is succeeding well; the Ford line to Chicago has made a good start because they employ nothing but highly experienced pilots and use nothing but highly efficient and up-to-date equipment.

In witnessing some 500 students solo and in practice flight, I have failed to have one of them say that they were confident they were qualified. No profession can be learned in two or three weeks that requires any responsibility.

L. H. Atkinson,
Chicago, Ill.

Letters to an Embryo Pilot

By Cy Caldwell

My dear Son:

Your mother and I were pleased to get your letter telling of your safe arrival at Garden City. And we are very pleased with the snapshot of your instructor, Mr. Jones.

If you feel it is absolutely necessary that you should purchase golf pants and long stockings like those worn by Mr. Jones, you may get them; though I thought I had bought the last long stockings for you several years ago. You will find that your toes wear holes in long stockings quite as soon as they do in socks. And the socks are cheaper. However, I have been paying for long stockings for your mother for a good many years now, so I suppose I can add you to the list again with only a slight shudder. The main thing is that you should learn to fly with the minimum of effort, and if you feel you can get about in the air easier in a rig like that, go right ahead and get it. They may carry long stockings in the gents' furnishings stores in New York, though here, at home, I guess you'd have to duck in to the ladies' ready-to-wear, to get a pair.

It is too bad that you have not been favored with fine weather during your first week in Garden City, but we note that you have transferred your activities to Greenwich Village, which your mother supposes is a little country town nearby. I have thought it just as well that she should keep on thinking that. Not that I would deceive your mother for a minute, in anything. You know that, son. But if she wants to think Greenwich Village is about like Steubenville, I think it would be easier on her mind to keep on thinking that way. She was wondering if there was a good church there, and I said I guessed there was. You might kind of mention that the sermon was fine, or something like that, when you write. I told your mother I guessed you'd pick up a lot of spiritual good in a little place like that.

You were kind of careless in your letter when you mentioned that some of the boys were lit up down at the village. Your mother didn't quite get that, but I helped out by suggesting that likely these were some pupils advanced to the night-flying stage. I think I would go kind of easy if I were you, at any rate, about writing so candid about everything. It's all right with me, you know. You might drop me a private line, at times. Kind of reminds me of old times. Not that the old man ever cut up any. You know that, son. But I kind of get a snicker out of hearing about you kicking up a bit, if you don't make a business of it, like, and if you don't spend too much on it.

Deacon Phillips was over today, and said he hoped you wouldn't lose sight of spiritual matters. I told him I guessed you kept them in mind all right. I was thinking of that night-flying. Your Aunt Sue is visiting us, and I hear there's a case of measles over to Smith's. These things are sent to try us, as the good Book says. That's all for now, from

Your affec.
DAD

Making Satisfactory Progress

My dear Son:

Glad to learn from your last letter that you are making such progress with your flying and so forth. We don't quite follow your references to "a couple of swell birds." Do you mean Orioles? For the benefit of your mother, I would suggest that you explain these purely technical terms, I've told her I haven't the least idea what you mean, and I'm going to stick to that, too. I've reached a time of life where peace and quiet in the home is what I aim at, rather than to bust it up by explaining things I don't understand, or am not supposed to, anyhow. Not that I do, either. You know that, son.

Speaking now, not as your father, but merely as an old boy who has been about a bit, (which you need not refer to in your next letter) I would suggest that a study of birds, either swell or lean, is not necessarily helpful in acquiring

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a knowledge of aviation. If you will content yourself with what Mr. Jones may tell you about flying without seeking this first-hand information from the birds themselves, you will remove one more slight worry from my mind.

Your mother says to be sure to wear your rubbers and your muffler when you go out. And I'll add privately that it wouldn't be a bad idea to wear the muffler even in the house when you sit down to write home to us. In your next letter, for instance, you might mention casually "what swell birds the Curtiss Orioles are," or something like that. I sort of said that you were using technical language about the planes. Not that I'd countenance any evasion for a minute, you understand, but if you think they're swell, why there's nothing to prevent your saying so. A nod ought to be as good as a wink to a son of mine, though I will say this: You don't seem quite as bright as I was when I was your age, about some things.

Incidentally, I think you might pick up a knowledge of flying a sight quicker if you paid more attention to the planes, and somewhat less to the fancies. Not that I'd have you make a hermit of yourself, you understand. But I think it would be as well if you stuck to the Jennies and left the Janes alone. However, I guess your procedure is about standard at your age, come to think back a bit, myself, though you needn't mention that in your next letter, either.

Things are about the same about the old place. Your mother says it's sort of tough on me to have to do all the chores alone, now you're away. But, as I told her this morning, I don't notice the increase of work any. I guess you'll see what I mean, if you think real hard.

The old mare's been off her feed lately, and your Aunt Aggie's not very spry either. Wish it was spring, so I could put her out to grass—the mare, I mean. But come to think of it, I don't know as I'd mind much if your Aunt Aggie went along too—though you needn't mention that when you write. We're not getting above a pint of milk a day from the old Jersey. She's about dried up. So is

Your affec.

DAD

To Carry Letters Across the Pole

Capt. George H. Wilkins, the Arctic explorer who is backed by the American Geographical Society in his flight to the North polar regions in March, has received an offer from A. C. Roessler, the East Orange Stamp dealer, to carry 200 letters at $10.00 per letter.

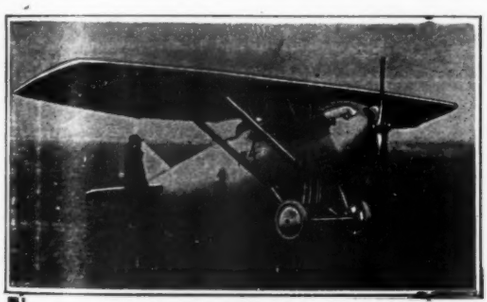
On account of having to save weight, these letters will be only 1 x 1½ inches and made of the lightest weight paper. Captain Wilkins has accepted the offer and 200 letters will be sent.

The traffic in these souvenir letters carried by plane is increasing rapidly and now it is an organized business. The announcement of a new flight brings cables from different points in Europe, ordering the new covers, and one dealer does at least $30,000 of business annually.

Air Mail Makes Record

Maintaining a speed of more than 134 m.p.h., Air Mail Pilots Shirley J. Short and Harry A. Chandler established a record for night flying when they covered the distance from Chicago to New York—726 mi.—on the night of Jan. 28-29 in an actual flying time of 5 hr. 24 min. The schedule time for covering this route between the two cities is 7 hr. 30 min.

Pilot Short left Maywood Field, Chicago at 7:41 p. m. central time and stopped for 17 min. at Bryan, Ohio, on his way to Cleveland, where Pilot Chandler took the plane and completed the journey to New York, reaching Hadley Field at 2:45 a. m. on Jan. 29. The plane carried 144 lb. of mail matter.



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Packard 2A-1500 Engine on Test

The Navy Department has announced the highly satisfactory completion of an endurance test of the Packard 2A-1500 aircraft engine at the plant of the Packard Motor Car Co. in Detroit. This engine, originally designed as a 450 hp. engine at 1800 r.p.m., was tested for a total of 50 hr. at wide open throttle and developed 600 hp. at 2500 r.p.m. The test was completed in four periods, one of which covered 28 hr. non-stop at full power. During the 50 hr. test, spark plugs were cleaned twice and but two minor replacements were made. At the end of this time the engine was in excellent condition and capable of continuing the test.

This performance is an excellent measure of the progress in aircraft engines since the war. The new Packard engine has a piston displacement of 1500 cu. in. against 1650 cu. in. for the Liberty. On this displacement, it develops half as much power again as the Liberty, when subjected to tests that have, in the past, rendered Liberty engines unfit for further running. With this increased power, the engine weighs 150 lb. less than the Liberty. In other words, it develops 200 additional horsepower on 150 lb. less weight. This is one of the most notable engine developments of modern times.

Lower Weight per Horsepower

The completion of this test marks the culmination of an active period of development which commenced in Dec., 1922, with the purchase of three experimental engines of 1300 cu. in. capacity each. During the development, it was found possible to increase the capacity to 1500 cu. in. on about the same engine weight, and this was done. Upon the satisfactory completion of the experimental work, the Navy Department entered into a contract with Packard Motor Car Co. for ten additional engines of this type. The Packard engine can be used driving a propeller directly or through reduction gearing. It can also be run successfully in the inverted position. This latter fact makes it possible to greatly improve the vision ahead in airplanes and to improve the aerodynamic qualities. The ten new engines, therefore, were manufactured in three forms—direct driven, gear driven, and inverted.

One of the direct-drive engines, when installed in an airplane, showed an increase in speed of 12 m.p.h. over older models, together with greatly improved performance all around. The inverted engines have been installed in Loening Amphibians and are now being tested at the Naval Air Station, Anacostia, where they have shown greatly improved performance over the old Liberty installation such as was used in the Arctic flight planes.

Used on the PN-9's

The geared engines were installed in the two PN-9's for the West Coast-Hawaiian flight. The first of these holds the world seaplane endurance record, and successfully carried Commander Rodgers and his companions toward the Hawaiian Islands until shortage of gasoline enforced a descent to the water.

As a result of flight experience with the engine, it was decided to make a number of minor improvements and these were incorporated in the engine which has completed the successful test. As a result of the changes, the engine is one of the smoothest running, most dependable high powered, light weight engines in existence today. The Navy Department has now decided to use this engine in a squadron of fighters being ordered for the airplane carriers, Lexington and Saratoga.

A contract has been placed for 74 additional engines of this model for the fighters, for two PN-10's (later developments of the PN-9), and for ten new Loening Amphibians. None of these engines will be required to utilize the 600 hp. developed on the test and the real object of the test was to obtain an engine capable of 50 hr. full throttle endurance at 600 hp. in order to greatly increase the life of the engine at about 500 hp.

This new Packard engine is equipped with Scintilla aircraft magnetos.

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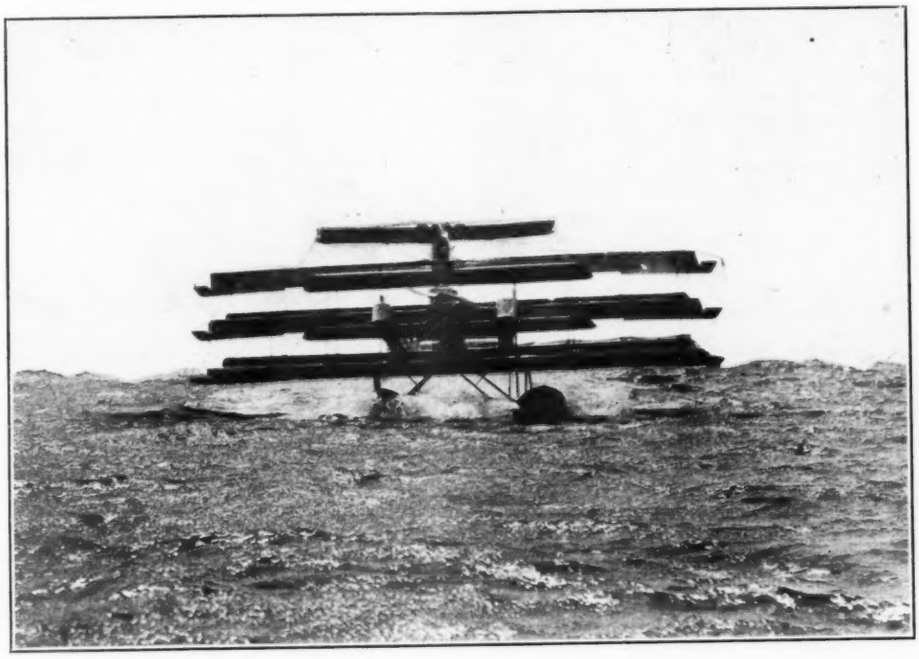

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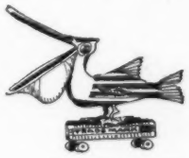
TRADE  MARK

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AIRPORTS AND AIRWAYS

Pittsburgh, Pa.

By Ray A. Tucker

The Aero Club of Pittsburgh is to hold its Fourth Annual Aviation Ball on Monday evening, Feb. 15, at the William Penn Hotel. This ball is one of the local outstanding social events of the winter and, based on past successes in attendance and in originality of program, this year's affair should surpass all others as a result of the work being performed by the following committee chairmen and their assistants:

General Ball Committee— Theodore Taney, Chr.; H. Frank McCaffrey; W. Press Anderson; Christopher J. Evans; William L. Scott.
Decoration Committee—Howard B. Pearce, Chr.; Raymond M. Marlier; Charles H. Sorber; Hilary D. Waterson; H. W. Schreiver.
Stunt Committee—Robert E. Dake, Chr.; William J. Schofield, Jr.; A. B. McSwigan; Robert A. Laedlein.
Patroness and Box Committee—Thomas M. Jones III, Chr.; Dorwin J. Donnelly; Col William Thaw; J. Dalzell McKee; Harmar D. Denny, Jr.; Col. A. W. Wyckoff.
Publicity Committee—Ray A. Tucker, Chr.; Theodore Taney; Lewis B. Lawrence; George Ketchum; W. Byron McGill.
Ticket Committee—Louis T. Barry, Chr.; Joseph M. Slater; John W. Donahey; Col. Harry C. Fry.
Entertainment and Music Committee—W. Press Anderson, Chr.; William W. Booth; William E. Close; Lawrence A. Wilson; John J. Feery.

As in preceding years, it is hoped that many out of town guests will make their appearance and they will receive a warm welcome from the Club members.

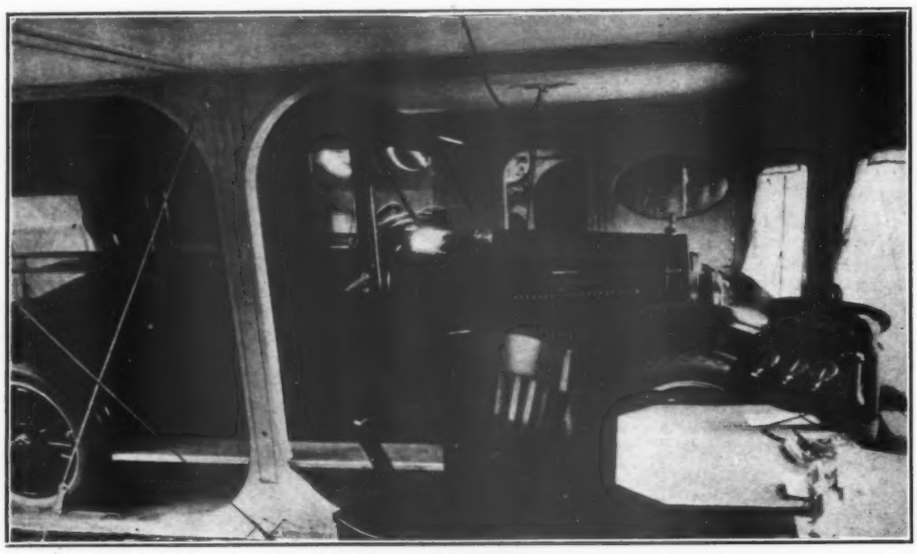
Very recently, the Aero Club had the pleasure of entertaining, at a weekly luncheon, Lt. Byron J. Connell, U.S.N. of "Hawaiian PN-9" fame, who claims Pittsburgh as his hometown. In a very interesting and entertaining talk, he told of his experiences as a member of the crew of the PN-9 on that eventful flight and brought out the fact that, although press dispatches had carried a report that the crew of the plane had been "saved from a watery grave," by the submarine that rescued it, they were at the time of the rescue within 10 miles of land and sailing at a good speed.

Through the recent action of the Postmaster General in advertising for bids on a proposed Pittsburgh-Cleveland Air Mail route, it would seem that Pittsburgh may eventually become connected with the air mail system. It is doubtful, though if any sane contractor will make a bid with the expectation of deriving anything but a financial loss, due to fast train service competition, which, in this short haul, can render nearly as fast a service as can the planes, in making connections at Cleveland, with the transcontinental air mail.

Spokane, Wash.

By E. H. Partridge

Charles T. Wrightson, business manager of the Varney Airplane company and Leon D. Cuddeback, chief pilot of the same concern, have been in Pasco, Wash., looking over landing facilities which they will need when the company begins its Pasco-Elko, Nev. mail carrying contract. Planes of the Swallow type are being made ready and fields chosen in order that the mail work can be begun on April 1 under contract with the government. Both men were guests recently of the Pasco Chamber of Commerce and made short talks.



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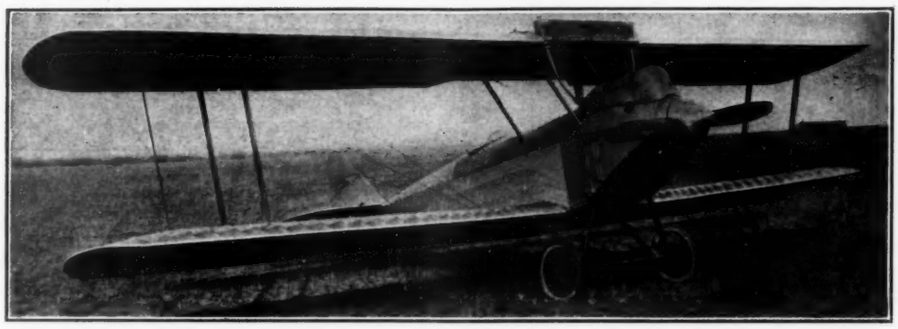

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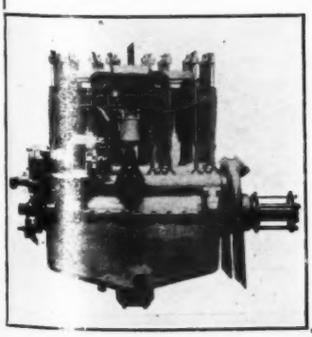

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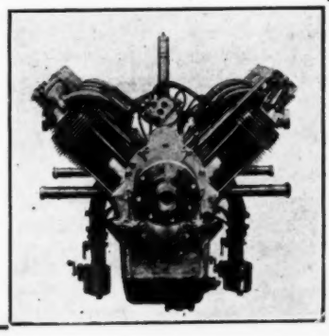

Mr. Wrightson said passengers will not be carried at the start but that an express service probably will be instituted before the end of the year.

Officers of the 116th Observation Squadron, Washington National Guard, showed 12 reels of official Air Service pictures here to raise money for improvements at the field. Development of planes from the time of the Wrights to the present was outlined in the films.

Arthur Stimson, Guard photographer, has taken scores of aerial photos of interesting places in and near Spokane. Spokane's daily papers have used many of his pictures. Guard pilots have been making flights each Sunday during the winter. Some of the more enthusiastic fliers have also been getting in some time during the week. Lieut. W. W. Wadsworth, who took training at Kelly Field, has returned to the Guard and has taken his place with the other pilots. He has been away from the city for four months.

Despite a mild winter and good flying conditions, commercial aviators have found little to do. Frank Kammer, commercial pilot, is discussing plans for a passenger service between the mid-West and the West coast, if funds are forthcoming.

Los Angeles, Calif.

By Pat MacDonald

Los Angeles is forging forward as a center of commercial aviation in the United States. At Glendale, Mr. Waterhouse is building a steel tube fuselage job with an OX5 engine. Mr. Waterhouse has several orders for spring delivery. The Rogers Airport has ordered three of the Waterhouse planes.

Takeo Watanabes light monoplane will be ready to test soon. It has a steel tube fuselage, carries two passengers and is powered with a 65 hp. Anzani, engine.

Down at Dycer Airport, Mr. Crawford plans to build two Junkers planes. One will be a twelve-passenger type, fitted with three Wright Whirlwind engines. The other will carry six passengers and will be fitted with a German B.M.W. engine. Mr. Crawford already has one Junkers plane. This plane was somewhat injured in a forced landing due to failure of the air pressure in the gasoline system, but will shortly be ready for operation again.

Eagle Airport recently changed gasoline companies and, by special arrangement, now has a considerable amount of new paint on the planes. Ernie Longbrake is president of the airport and Mr. Spear is the manager. They own and operate Canuck N9 and Standard types of planes.

Burdett Airport reports a very satisfactory year. In 1924 nearly 3,000 passengers were carried, and 34 students soloed. They now have 28 students enrolled. There are 16 planes at Burdett Airport, including a Travel Air, a T. M. Scout, a Hisso-Jennie, 8 JN4D's, all in good flying condition, and several other ships in storage.

The Black Cat Club makes its headquarters at the Burdett Airport. This club has 13 members. The qualifications to become a member are a parachute jump, a "ship change" and the qualification of being a pilot. Reginald Denny was the thirteenth member.

Burdett Airport employs a wing builder, a designer, two mechanics, a welder, three pilots and a flock of wing wipers, grease hounds and several Modocks.

New York-Florida Flights

Clif. Webster, chief pilot for the Curtiss Metropolitan Airplane Co., claims to come nearer than anyone in being an aerial commuter between New York and Florida. The Curtiss Metropolitan company operates flying boats from Port Washington, L. I., in the summer and from Palm Beach, Fla., in the winter. Webster has been ferrying the company's planes from New York to Florida since 1919. In 1922, in a Loening Air Yacht, he flew from Palm Beach to New York in 11 hr. 15 min., a record which still stands. Last spring he flew two Loening planes up from Florida and this fall he has flown the company's two Loening planes and a Seagull down from Port Washington. The third trip this fall was made rather late in the season with ice in the harbors

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as far south as Carolina. One of the planes dragged its two anchors during a heavy storm at Beaufort, N.C., and damaged a wing; so the flights have not been uneventful. The Curtiss Metropolitan company sold a Seagull this fall and the company's other pilot, Pete Talbot, remained with the purchaser. Fred Golder, manager of the company, had to set up the company's last new Seagull, which accounted for the delay in the last trip South.

Fred Golder advises that Rogers Airlines have their headquarters in Miami as usual and have one Seagull here at Palm Beach with George Rummell as pilot. Ray Applegate is also here with an M.F. boat with Hisso engine.

Baron Von Bruddenbrock recently flew to Palm Beach with the Dornier Wal from South America. They made a trip to the Bahama Islands from here and planned on their return to stop at Miami. This trip was in the nature of a propaganda trip, boosting Zeppelin and Maybach engines and boats, in conjunction with the New York office. It is mentioned also that the trip from South America was in the nature of a demonstration trip to show the feasibility of a mail service from South American points to Key West or Miami.

* * *

There are several H.S. boats in Miami also doing a fair commercial business and the aerial survey and photographic companies are receiving some very good contracts from the various real estate developments. The Navy's aerial armada is due to pass through here on its annual cruise to Guatanamo, Cuba, for winter maneuvers.

* * *

Charlie Collier has a sky-writing outfit at Daytonia and expects soon to be in Palm Beach and Miami, advertising Lucky Strikes.

Pilot Ekstrom recently flew in with a Waco, advertising the Frank Bryson advertising agency. Otis Hardin, who has had a Jennie in this neighborhood for some time, now has a Waco and the agency for same, with a field at Sebring. The Inter-Southern Airways are organizing for mail and express service between Atlanta, Jacksonville, Tampa, Palm Beach and Miami. They have ordered two Curtiss Larks, two Fokkers and two Wacos. The general manager is that very energetic and capable pilot Ralph Devore of West Palm Beach.

To Command Polar Flight

Announcements from Oslo Sweden state that Signor Nobile will be commander of the airship Norge, now building in Italy for the Amundsen-Ellsworth expedition from Spitzbergen to the North Pole and Alaska, planned for next March.

The preliminary itinerary selected includes Rome, Marseilles, Paris, Pulham, Leningrad, Nyborgsmoen, Drill Field, Finmark and Kingsway, Spitbergen. If the airship shed at Leningrad is unsuitable, the route from Pulham will be via Oslo, where a mooring mast will be erected, and thence across Sweden to Nyborgsmoen and Spitzbergen.

The reason for taking the circuitous route is to avoid a flight across the North Atlantic in the tempestuous winter months.

Pasco Prepares for Air Mail Line

The city of Pasco, Wash., has provided an air mail landing field and a hangar will be constructed on it by the time service starts in April, according to Charles T. Wrightson, route superintendent for W. T. Varney, air mail contractor on the Elko-Boise-Pasco route. At Elko, Mr. Varney will use the trans-continental mail airport, so it is only at Boise, where he desires to make his headquarters, that facilities have not yet been provided for taking care of the air mail ships.

Pasco had two sites to offer as airports to Mr. Wrightson when he arrived there, he said, both of which were class A fields. He selected one of these for use by the air mail and was assured that steps would be taken immediately toward providing hangar facilities. While Pasco is only a small place, its people are enthusiastically back of the air mail and promised both money and labor to help Mr. Varney in making the route a success.

United States Air Forces

The Foreign Service Situation

Lieutenants, especially first lieutenants, who have had no foreign service, will soon be due for such service. In this connection the following table is of interest:

Station	Strength Allotted	Per cent of Total on F.S.	In stating preferences they were 1st Choice	2nd Choice	3rd Choice
Philippines	58	28%	89%	3%	3%
Hawaii	89	44%	8%	25%	13%
Panama	58	28%	3%	24%	15%
Total	205	100%	100%	*52%	*31%

From the above it can readily be seen that, even if it were not necessary to consider such questions as availability (student at schools, etc.) or qualifications (radio, photo, etc.), some of the officers sent to Hawaii and Panama must be from among those who gave those stations as their third choice.

Every possible consideration is given to the desires expressed by the officers as to their preferences of station and it is regretted that it is impossible to give everybody their first choice.

The same thing applies in many cases to officers returning from foreign service. At least three-fourths of those who give any preference state that they desire station on the Pacific Coast. On account of the small percentage of Air Service officers stationed in that area it is apparent that only about one out of ten can be granted such request.

Anacostia Naval Planes Make Weather Observations

The weather observations by airplane which were begun by the Naval Air Station at Anacostia last June have been of such value that it is planned to increase the number and regularity of these observations. Heretofore, observations have been made only on week days. In the near future, Lieut. Comdr. H. C. Wick, commanding officer of the Naval Air Station at Anacostia, plans to inaugurate daily observation flights including Saturdays and Sundays. When this plan is put into effect, the data from these observations, which are of great importance in the preparation of weather forecasts, will be available to the Washington forecasters every morning except when the weather is so bad that planes cannot fly.

At about 7:30 a.m. each morning, a specially equipped plane will leave with a pilot and an aerological observer who will make special note of air conditions such as clouds, which are not recorded by the aerograph. Queer things are sometimes found in these upper strata. Sometimes, when the air on the ground is oppressively warm, a cool refreshing current is found only a few thousand feet high, while on other occasions, when pedestrians are rubbing their fingers to keep warm, a balmy summer breeze is encountered only a short distance above the earth. Inasmuch as our weather is largely determined by the temperatures of the air above the earth and by the moisture which this great mass of upper air contains, it is easy to see that observations of temperatures and humidities above the earth are of great importance to the weather forecaster.

Upon landing, after completion of the flights, the observations will be quickly worked up and the computations telephoned to the weather bureau and to the aerological section of the Navy Bureau of Aeronautics.

Weather forecasters are very enthusiastic about these upper air observations. The meteorologists of the weather bureau have repeatedly expressed the desire for more such observations. The collection of observations by airplane marks a distinct step forward in weather science. Meteorologists look ahead to the day when they will receive upper air weather reports from all important aviation fields throughout the country and will thereby be enabled to prepare much better weather forecasts than is possible at present.

Since the commencement of the work in June, 1925, 113

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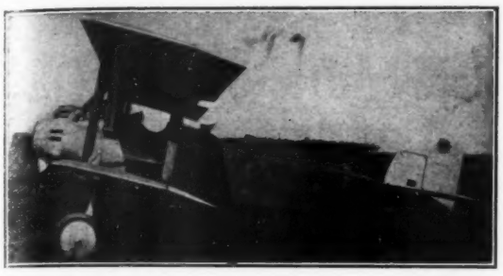

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flights have been made at Anacostia Naval Air Station, with a total of 65 hr. in the air. The highest altitude reached by the pilots in taking the weather observations was 18,156 ft. and the lowest temperature encountered was 1 deg. Fahr.

Special arrangements have been made to reach extremely high altitudes during the hurricane season in order to still further assist the weather bureau in predicting the occurence and magnitude of hurricanes.

It will take about a year's steady observation and checking with other observations that the weather bureau makes, to get complete data on the relation of the atmosphere's effect on weather at higher altitudes and those which the Weather Bureau has been taking in the past at the surface.

Flying Officers to Command Aircraft Carriers

Steps are also under way for the selection of flying officers to command the aircraft carriers, following out a recommendation of the Lampert Committee. It is now understood that three of the senior captains may be sent to Pensacola for flying instructions. Among those who may be sent are Capt. George Steele, Capt. H. E. Yarnell, Capt. Thomas Craven, Capt. Joseph M. Reeves and Capt. A. W. Marshall.

Army Air Orders

Capt. Ivan B. Snell, A.S., office Chief of A.S., to Brooks Field.

First Lieut. Earle H. Tonkin, A.S., Fitzsimons Gen. Hospital, to Kelly Field.

First Lieut. Burton F. Lewis, A.S., McCook Field, to New York City, Lieutenant Lewis to sail on transport March 18 for Canal Zone.

First Lieut. Henry F. Sessions, A.S., Langley Field, to New York City, Lieutenant Sessions to sail May 13 for Canal Zone.

Maj. Henry J. Miller, A.S., Office Chief, Mil. Bur., Washington, to New York City, Maj. Miller to sail March 12, via Govern. transportation, for Hawaiian Dept.

Capt. Henry Pascale, A.S., Wright Field, to New York City, Captain Pascale to sail March 12, via Govern. transportation, for the Hawaiian Dept.

First Lieuts. George W. Palk, jr., A.S., McCook Field, Leon E. Sharon, A.S., Fairfield and Charles L. Williams, A.S., Langley Field, to New York City, sailing Apr. 22, via Govern. transportation, for Hawaiian Dept.

Sec. Lieut. Lee Q. Wasser, A.S., Kelly Field, to San Francisco, Lieutenant Wasser to sail May 12, on transport, for Hawaiian Dept.

Sec. Lieut. Charles D. McAllister, A.S., Selfridge Field, to New York City, Lieutenant McAllister to sail Apr. 22, via Govern. transportation, for Hawaiian Dept.

Capt. John W. Signer, A.S., Crissy Field, to San Francisco, Lieutenant Signer to sail May 12, on transport, for Hawaiian Dept.

Following officers assigned to duty at station indicated, upon completion of tour of foreign service: First Lieuts. Ray A. Dunn, A.S., Fairfield, Grandison Gardner, A.S., Langley Field, Lloyd C. Blackburn, A.S., Langley Field, Arthur I. Ennis, A.S., Chanute Field, William C. Goldsborough, A. S., Kelly Field, Arthur G. Hamilton, A.S., Kelly Field, Alfred L. Jewett, A.S., Marshall Field.

Capt. Edward C. Black, A.S., Langley Field, detailed as instructor of A.S., Maryland Nat. Guard, Baltimore.

Spec. Orders 296, relieving Capt. William F. Voldant, A. S., from assignment McCook Field, and ordering him to proceed to New York City, for transportation to Philippine Is., revoked.

First Lieut. Kenneth B. Wolfe, A.S., Brooks Field, to San Francisco, Lieutenant Wolfe to sail on transport Apr. 3 for Philippine Islands.

First Lieut. Armor S. Heffley, A.S., Kelly Field, to San Francisco, Lieutenant Heffley to sail Apr. 3 for Philippine Is.

Sergeant Scott Cole, A.S., Mitchel Field, transferred in grade of Sergeant to Det. En. List and detailed to duty with Conn. Nat. Guard, Hartford.

Following officers A.S. relieved from assignment and duty Scott Field and will proceed to Brooks Field: Capt. Roland W. Wittman, First Lieut. Joseph P. Bailey and First Lieut. Lawrence A. Lawson.

Capt. Oliver P. Echols, A.S., Bolling Field, to Office Chief

A.S., Washington.

First Lieut. James M. Gillespie, Ord. Dept., transferred to A.S.

Staff Sergeant Arthur Jolly, A.S., Cumberland Field, upon completion of temporary duty, to McCook Field.

Sergeant Morris H. Munn, A.S., Camp Nichols, P.I., transferred to grade of private to the Quartermasters Corps, Ferry Road, Phila.

First Lieut. Leland C. Hurd, A.S., Selfridge Field, to Washington, for duty Office Chief of A.S.

First Lieut. Harry A. Halverson, A.S., Office Chief A.S., Washington, to San Antonio.

Spec. Ortlers 284, relieving Capt. George S. Warren, A.S., from duty Scott Field, and ordering him to proceed to New York City for transportation to Panama, revoked.

Transfer of Sec. Lieut. Walter W. Hodge, A.S., to Corps of Engineers, announced. Lieutenant Hodge is relieved from duties with Sec. Div., Fort Sam Houston and will report to Com. Gen. of that Div. for assignment with Corps. of Engineers.

Transfer of Sec. Lieut. George Wellington Madison Dudley, A.S., to Inf., announced. Lieutenant Dudley is relieved from duties with Sec. Div., Fort Sam Houston and will report to Com. Gen. of that Div. for assignment with the Inf.

Navy Air Orders

Capt. Stanford E. Moses det. Nav. Exam. Board, Navy Dept., to Nav. Air Sta., Pensacola.

Lieut. Comdr. Martin Griffin det. Aircraft Sqdns., Battle Flt., to U.S.S. Burns.

Lieut. Winfield S. Cunningham det. Obs. Plane Sqdns. 3, Aircraft Sqdns., Sctg. Flt., to U.S.S. Milwaukee.

Lieut. Robert H. Harrell det. Obs. Plane Sqdn. 3, Aircraft Sqdns., Sctg. Flt., to U.S.S. Richmond.

Lieut. (jg) John P. Heath det. Obs. Plane Sqdns. 3, Aircraft Sqdns., Sctg. Flt., to U.S.S. Richmond.

Ensign Albert R. Linholm det. U.S.S. Brazos, to temp. duty Nav. Air Sta., Pensacola.

Pay Clerk Albert H. Richter det. Nav. Air Sta., San Diego, to Asiatic Station.

Ensign Herbert R. Ballinger det. U.S.S. California to instr. Nav. Air Sta., Pensacola.

Ensign Dale Harris det. U.S.S. Hopkins, to instr. Nav. Air Sta., Pensacola.

Ensign Frederick C. Hartman det. U.S.S. Oklahoma, to instr. Nav. Air Sta., Pensacola .

Ensign John M. Sweenery dct. U.S.S. Corry, to instr. Nav. Air Sta., Pensacola.

Lt. Comdr. Laurence R. Brown det. U.S.S. Kanawha, to Nav. Air Sta., Pensacola.

Lt. (jg) John M. Hoskins det. Obs. Plane Sqdns. 3, Sctg. Flt., to U.S.S. Memphis.

Lt. (jg) John L. Pratt det. Obs. Plane Sqdns. 3, Aircraft Sqdns., Sctg. Flt., to U.S.S. Detroit.

Lieut. Paul Carter to continue duty Nav. Air Sta., Pensacola; orders Dec. 19 revoked.

Lieut. Ben H. Wyatt det. Nav. Air Sta., San Diego, to Battle Flt.

Comdr. Charles V. Ellis (ChC) det. Nav. Air Sta., Pensacola, to U.S.S. Oklahoma.

Pay Clerk Fred. Robinson det. Navy Yard, Mare Island, to Nav. Air Sta., Pearl Harbor.

Lt. (jg) Michael H. Kernodie det. Aircraft Sqdns., Sctg. Flt., to U.S.S. Wyoming.

Ensign Paul Graf det. U.S.S. McDermut to temp. duty Nav. Air Sta., Pensacola.

Lieut. Fred C. Dickey det. Obs. Plane Sqdns. 3, Aircraft Sqdns., Setg. Flt., to U.S.S. Marblehead.

Capt. Hugh M. T. Pearce (ChC) det. Navy Yard, Portsmouth, to Nav. Air Sta., Pensacola.

Pay Clk. Joseph F. Batzer det. Rec. Ship, San Francisco, to Nav. Air Sta., San Diego.

Marine Corps Air Orders

Sec. Lieut. C. L. Marshall det. MCB, NOB, San Diego, to N.A.S., San Diego .

Sec. Lieut. L. R. Kline det. MCB, NOB, San Diego, to N. A.S., San Diego.

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PUBLISHER'S NEWS LETTER

In support of the contention of AVIATION that aerial service is financially successful in this country, it is interesting to learn of the operations of E. A. Johnson of Dayton. He has a flying field, a hangar and a shop. His aerial service is typical of other fixed base operators. In five years he has carried 28,241 passengers. There have been no accidents and no one has been injured. There were 602,876 miles flown in the 20,071 flights, of which 1,168 were cross-country trips. In order to stimulate an interest in flying among young people, Mr. Johnson introduced the "cent a pound" flying rate. The heaviest passenger weighed 308 pounds while the lightest was a child weighing only 21 pounds. A whole family was carried for $3.89. Mr. Johnson's operations show how aerial service when managed by competent air people can be made profitable.

* * * *

When so much is heard on all sides, and particularly in newspapers, of the great progress made in Europe with aircraft utilization, it is always pleasing to be able to record the definite figures of the success of American airplanes. The net of the success of commercial aviation whether air transport or aerial service is the result of a very simple calculation. Aircraft that make money will be the backbone of commercial aviation. If the use to which an airplane is put can not be made profitable it will not become a part of commercial aviation. This is the largest question before airmen today: What uses of aircraft can be developed and made profitable? By keeping that very simple question in mind when considering the future of commercial aviation the whole problem becomes greatly simplified.

* * * *

This year will bring the crucial test of air transport in this country. The best experience and ability, backed by ample capital will direct the efforts of the air transport companies. The routes have been chosen after a full investigation of traffic possibilities. The cooperation of all the cities along the right of way, if it may be so termed, has been whole hearted and complete. Never was there such a good opportunity for success from a financial standpoint. If even a demonstration can be made that airplanes can operate regularly in this country and receive a fair share of traffic, the year 1926 will stand in the history of aviation as the starting point of the new era for which so many have waited with patience and courage.

* * * *

When comparing American air transport with European air lines, the statement is often made that the absence of frontiers will be an advantage here. Enquiry abroad does not support this view. In Europe, it gives a great advantage to air transport operations as air travellers are shown exceptional courtesy and do not have to undergo the petty annoyances of customs inspection at the borders of countries. It is a distinct advantage that is becoming recognized.

* * * *

Here, in the absence of Federal regulation, state laws may create difficulties that even a Federal law may not be able to overcome. Some states may not be willing to have their air used for air transport if the service is not of benefit to its own people. Take a route from Chicago to Washington as an example. A stop in Indiana or in West Virginia may not be advantageous. These states may object to the use of their air to give adjoining states and their cities an advantage. This is one of the many problems that may have to be handled with extreme care. The record of the railroads in establishing through trunk lines in the early days is filled with similar difficulties. It has been assumed that Federal regulation will solve most of these problems. But when the acute sensibilities of state rights come into play, air transport may find it one of its real obstacles.

* * * *

Another point that has received little or no attention is the disadvantages that an air terminal city may come under. Taking the same Chicago-Washington air route. If it is flown by day, the loadings of the airplanes would have to be made on the day before. In the case of the Eastern flight, goods from Detroit, Minneapolis, St. Louis and other cities a night's journey away from Chicago by train would have the same advantage as those sent from Chicago. In other words the merchants of these other cities would be placed in a similar position as far as service is concerned with those of the city from which the flight starts. If this line of thought is applied to other routes it is easy to determine the cases where the shippers of the terminal cities will not receive as great an advantage as those in cities within the radius of a night's train journey. Of course, night flying will change this situation immediately but until then this very interesting possibilty may well be given thought. It enlarges the traffic possibilities of the air transport companies greatly and if advantage is taken of proper publicity it may prove the great revenue producing source of air traffic. Air transportation standing alone may have great limitations but when it is utilized to the fullest extent in connection with other transportation agencies, it may become a great and profitable national service.
L.D.G.

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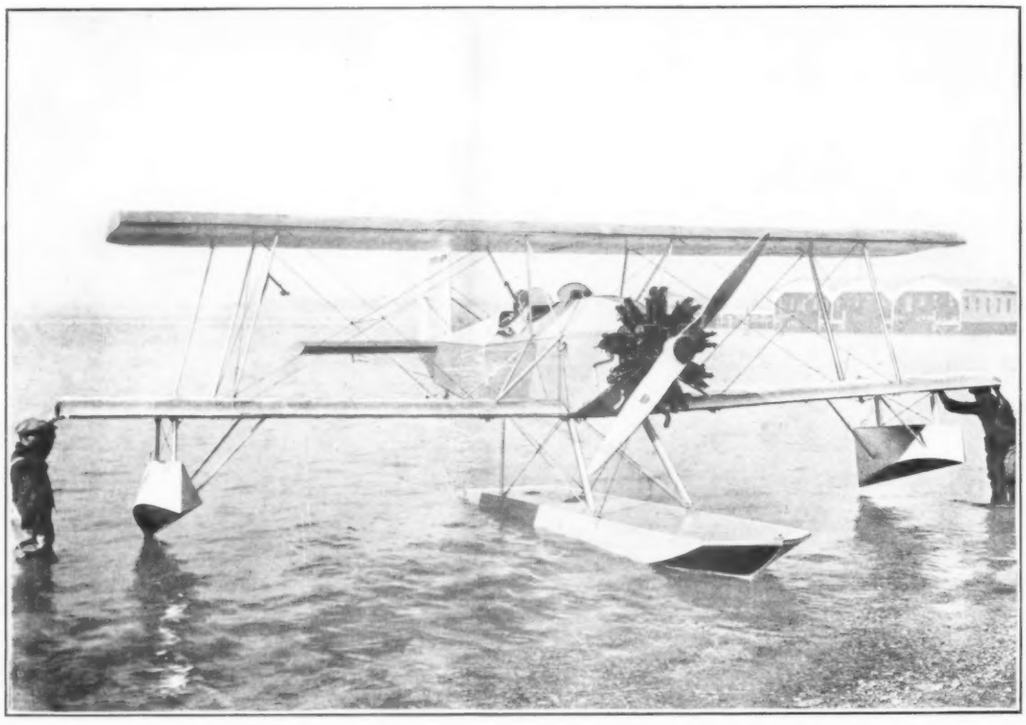

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